



482941

ATTACHMENT B [TO ADMINISTRATIVE ORDER]

LIABILITY FILE INDEX FOR NL INDUSTRIES, INC.

<u>Document Summary</u>	<u>Document Date</u>
Warranty Deed pertaining to property located at 12042 S. Peoria Street, Chicago, IL. Grantor: Carter White Lead Company. Grantee: National Lead Company.	12/36
✓ Warranty Deed pertaining to property located at 12042 S. Peoria Street, Chicago, IL. Grantor: NL Industries, Inc. Grantee: ELT, Inc.	12/76
✓ Letter from F.R. Baser, Director, Environmental Control Department, NL Industries, Inc. to Regional Administrator, EPA. RE: Completion and enclosure of "EPA Notification of Hazardous Waste Site" forms.	06/09/81
✓ EPA Potential Hazardous Waste Site, Preliminary Assessment. Site location 12042 S. Peoria Street, Chicago, IL.	03/27/84
✓ Letter from Michael J. Najeweski, Senior Claims Representative, INA Insurance Co., to Donald Gimbel, Legal Department, IEPA, RE: Potential claim for damages and request for IEPA file information.	09/22/86
✓ Letter and memorandum from Janet D. Smith, NL Industries, Inc., to Richard Carlson, IEPA. RE: NL's liability for removal.	03/02/87
✓ An Alternate Remedial Investigation/Remedial Action Plan for Dutch Boy Paints Site. Plan submitted by Toxcon Engineering Co. on behalf of NL Industries, Inc.	Undated.
✓ Investigation of the Former Dutch Boy Site. Prepared by Toxcon on behalf of NL Industries, Inc. (2 reports).	Undated
✓ Phase III Site Investigation Plan for the Dutch Boy Paint Plant Site. Prepared by Toxcon on behalf of NL Industries, Inc.	Undated
✓ Letter from William C. Child, Manager, Division of Land Pollution Control, IEPA, to NL Industries, Inc. RE: Cost recovery notice letter.	04/09/87

✓ Letter from Robert Finkelstein, Engineer, Toxcon, to IEPA, Attention Mary Dinkel. RE: Analytical results - site investigation Dutch Boy Paints Plant.	09/08/87
Letter from Robert Finkelstein, Engineer, Toxcon, to IEPA, Attention Brian Martin. RE: Analytical results - supplemental site investigation Dutch Boy Paints Plant.	08/09/88
✓ NL Industries, Inc. Environmental Impairment Liability Insurance Coverage.	Undated
✓ Preliminary Assessment. Prepared for Alan Altur, U.S. EPA, by Mark Dunnigan, E & E.	10/30/91
✓ Memorandum. Prepared for Alan Altur, U.S. EPA, by Mark Dunnigan, E & E.	10/30/91
✓ Complaint for Declaratory Judgment and Other Relief, filed by the City of Chicago in case of City of Chicago v. NL Industries, Inc. and ARTRA Group, Inc. Docket No. 91CH04534.	1991
✓ Transcript of Deposition. City of Chicago v. NL Industries, Inc. and ARTRA Group, Inc. Deposition of Chester Licking, retired chief engineer, NL Industries, Inc.	2/24/92
✓ Transcript of Deposition. City of Chicago v. NL Industries, Inc. and ARTRA Group, Inc. Deposition of Roger N. Cieslik, Chicago Department of Health.	04/30/92
✓ Transcript of Deposition. City of Chicago v. NL Industries, Inc. and ARTRA Group, Inc. Deposition of Clarence P. Smith, retired plant manager NL Industries, Inc.	06/23/92
✓ Environmental Assessment Report. Prepared by Simon Hydro-Search, Inc., on behalf of NL Industries, Inc.	11/93
✓ Site Assessment for Carter White Lead. Prepared for U.S. EPA by E & E.	12/29/93
✓ Witness statements from former NL Industries, Inc. and ARTRA Group, Inc. employees.	1995

- ✓ Transcript of Deposition. City of Chicago v. NL Industries, Inc. and ARTRA Group, Inc. Deposition of Mark Finn, former OSHA inspector. 7/31/95
12/15/95
- ✓ Site Assessment for International Harvester/Dutch Boy Site, Part 2 of 2. Prepared for U.S. EPA by E & E. 8/25/95
- ✓ Technical Review and Comments on the Potential Release of Lead from the Manufacturing Processes Conducted at the Dutch Boy Superfund Site prepared by Science Applications International Corporation for U.S. EPA. 02/14/96

BOOK 1486 PAGE 593

THIS INSTRUMENT WITNESSETH, that the Grantor, THE CATER WHITE LEAD COMPANY, a corporation organized and existing under the laws of the State of Nebraska, in consideration of the sum of ONE DOLLAR (\$1.00) lawful money of the United States, and of other good and valuable considerations to it in hand duly paid, grants, bargains, sells and conveys to NATIONAL LEAD COMPANY, a corporation organized and existing under the laws of the State of New Jersey, the following described real estate, to wit:

A PIECE OF LAND described as commencing on the Northwest corner of Peoria and 121st Streets on the North line of the Illinois Central Railroad right of way; running thence West along the North line of 121st Street, three hundred seventy-five and twenty one-hundredths (375 20/100) feet; thence North and parallel with Peoria Street, five hundred eighty and thirty-seven one-hundredths (580 37/100) feet to 120th Street; thence East on the South line of 120th Street, three hundred seventy-five and twenty one-hundredths (375 20/100) feet to Peoria Street; thence South on the West line of Peoria Street to the place of beginning, being a portion of Block seven (7) in the First Addition to West Pullman, a subdivision in the Northeast quarter of Section twenty nine (29), Township thirty-seven (37) North, Range fourteen (14), East of the third Principal Meridian in Cook County, Illinois, as per plat recorded August 22, 1902 as document 1721159.

AND the said grantor corporation does hereby covenant and agree to and with the said grantee that it will execute or procure any further necessary assurance of the title to said premises.

FILED EXACTLY AS IT
AL BOUND VOLUME.

BOOK 33-186 PAGE 534

BOOK 33-186 PAGE 534

THIS BOND is executed pursuant to the authority given by the Board of Directors of said grantor corporation.

IN WITNESS WHEREOF the said The Carter White Lead Company has caused its corporate seal to be hereunto affixed and these presents to be signed by its President and attested by its Secretary, this 31st day of December, One thousand nine hundred and thirty-six.

THE CARTER WHITE LEAD COMPANY

By

J. McNamee

President.

ATTEST:

Anna

Secretary.

DOCUMENT WAS MICROFILMED EXACTLY AS IT
APPEARED IN THE ORIGINAL BOUND VOLUME.

BOOK 33-186 PAGE 59

STATE OF Illinois

COUNTY OF Cook

BOOK 33-186 PAGE 59

I, Albert Van Bruggen

a Notary

Public in and for said County in the State aforesaid,

DO HEREBY CERTIFY That J. J. Morrison

personally known to me to be the President of The Carter
White Lead Company, and Charles C. Watts

personally known to me to be the Secretary of said cor-
poration, whose names are subscribed to the foregoing

instrument, appeared before me this day in person and

severally acknowledged that as such President and Secre-
tary, they signed and delivered the said instrument of

writing as President and Secretary of said corpora-
tion, and caused the same to be sealed and signed

therein to be attested thereto, pursuant to authority given

by the Board of Directors of said corporation as their

free and voluntary act, and as the free and voluntary

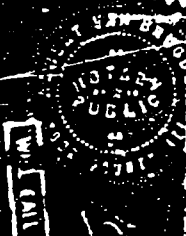
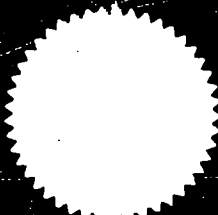
act and deed of said corporation for the uses and

purposes therein set forth.

GIVEN under my hand and notarial seal this

14th day of February, 1927.

Albert Van Bruggen
Notary Public



AND
BOOK 33-186
PAGE 59

STATE OF ILLINOIS
DEPT. OF PUBLIC SAFETY
RECORDS

11958633

THIS DOCUMENT WAS MICROFILMED EXACTLY AS IT
APPEARED IN THE ORIGINAL BOUND VOLUME.

1976 DEC 29 PM 3 24

L. 102 042

Statutory (ILLINOIS)

(Corporation to Corporation)

(The Above Space For-Recorder's Use Only)

HE GRANTOR NL INDUSTRIES, INC.

corporation created and existing under and by virtue of the laws of the State of New Jersey
 and duly authorized to transact business in the State of Illinois, for and in consideration
TEN (10.00) DOLLARS,

and other good and valuable considerations

in hand paid, and pursuant to authority given by the Board of Directors of said corporation
 CONVEY S and WARRANT S to ELT, INC.

corporation organized and existing under and by virtue of the laws of the State of Pennsylvania
 having its principal office in the City of Northfield County of Cook
 and State of Illinois the following described Real Estate situated in the County of
Cook and State of Illinois, to wit:

SEE SCHEDULE A ATTACHED

10⁰⁰ MAIL

In Witness Whereof, said Grantor has caused its corporate seal to be hereto affixed, and has caused its name
 to be signed to these presents by its Vice President, and attested by its
 Assistant Secretary, this 29 day of December, 19 76.



NL INDUSTRIES, INC.

(NAME OF CORPORATION)

BY Vincent R. McLean Vice- PRESIDENT

ATTEST: John T. Rafferty Ass't SECRETARY

State of New York, County of New York ss. I, the undersigned, a Notary Public, in and for the
 County and State aforesaid, DO HEREBY CERTIFY, that VINCENT R. McLEAN
 personally known to me to be the Vice President of the NL INDUSTRIES, INC.

~~XXXXXX~~ and JOHN T. RAFFERTY personally known to me to be
 the Assistant Secretary of said corporation, and personally known to
 me to be the same persons whose names are subscribed to the foregoing instru-
 ment, appeared before me this day in person and severally acknowledged that as
 such Vice President and Assistant Secretary, they signed
 and delivered the said instrument as Vice President and Assistant
 Secretary of said corporation, and caused the corporate seal of said corporation
 to be affixed thereto, pursuant to authority, given by the Board of Directors

of said corporation as their free and voluntary act, and as the free and voluntary
 act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and official seal, this 29 day of December, 19 76

FRED FLOERSHEIMER

Commission Expires March 30, 1978
 Notary Public, State of New York
 No. 57-6337000-0000
 Certificate filed in New York County
 Commission Expires March 30, 1978

NOTARY PUBLIC

ELT, INC.

(Name)

500 Central Avenue

(Address)

Northfield, Illinois

(City, State and zip)

ADDRESS OF PROPERTY:

001718

12042 South Peoria Street

Chicago, Illinois

THE ABOVE ADDRESS IS FOR STATISTICAL PURPOSES ONLY AND IS NOT A PART OF THIS DEED.

SEND SUBSEQUENT TAX BILLS TO:

ELT, INC.

(Name)

500 Central Avenue, Northfield, Ill.

0000.82

DOCUMENT NUMBER 23762511

SCHEDULE "A"

Commencing at the North West corner of Peoria Street and North line of the Illinois Central Railroad (now known as the Illinois Central Gulf Railroad) right of way as platted 100 feet wide; thence West along the North line of said right of way 375.20 feet; thence North and parallel with Peoria Street 580.37 feet more or less, to the South line of 120th Street; thence East on the South line of 120th Street 375.20 feet to the West line of Peoria Street; thence South on the West line of Peoria Street to the place of beginning, being a portion of Block 7 in the First Addition to West Pullman, a subdivision of the North East $\frac{1}{4}$ of Section 29, Township 37 North, Range 14, East of the Third Principal Meridian, according to the plat thereof recorded August 22, 1892 as Document No. 1,721,159;

said premises also being described as:

The East 375.20 feet of Block 7 in the Subdivision of that part of the re-subdivision of Block 2 lying South of the alley, except the C. W. P. & S. Railway right of way and the C. R. I. & P. R. R. Freight house grounds; also Subdivision of Blocks 5, 6, and 7 as formerly platted in the First Addition to West Pullman, including the I. C. R. R. Center Avenue Station at the South West corner of said Block 5 and including Aberdeen Street and Morgan Street (vacated) lying between 120th Street and the I. C. R. R. right of way; all being in the First Addition to West Pullman, being Subdivision of the North East $\frac{1}{4}$ of Section 29, Township 37 North, Range 14, East of the Third Principal Meridian, according to the plat thereof recorded March 31, 1902 as Document No. 3,224,223 and the Certificate of Correction recorded April 9, 1902, as Document No. 3,228,028,

all in Cook County, Illinois.

Parmanent Tax Number: 25-29-203-002

Volume: 471

Said premises also known as 12042 South Peoria Street, Chicago, Illinois.

23762842

001717

0123

F. R. Basor
Director
Environmental Control Department

June 9, 1981

Regional Administrator
US EPA Region 5
Sites Notification
Chicago, IL 60604

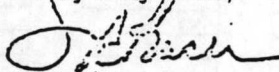
Dear Sir:

NL Industries, Inc. has completed and encloses 44 "EPA Notification of Hazardous Wastes Site" forms, each of which identifies a site within your region where hazardous waste may have been stored or disposed of. Certain facilities were or are owned by subsidiaries, whether wholly or majority owned; some of these subsidiaries have been liquidated, and some have not. For convenience of reference, all notifications are being made in the name of the parent, NL Industries, Inc. In some cases our information is incomplete as to dates that old facilities started and/or ceased operations. In most of these cases the facility no longer exists.

NL was formed in 1891 by the merger of a number of independent lead or related product manufacturers, some of which may have been in business for over a century previous to 1891. We have not attempted to complete forms for facilities not operated since 1891, because of doubt regarding the obligation to do so, and our general lack of any specific information regarding such sites. Similarly, we are generally unable to trace the corporate history of companies which were acquired and therefore have not included facilities which were disposed of by such companies prior to the date of acquisition by NL.

A number of our filings are precautionary and are based on uncertainty induced by the absence of regulatory guidance in interpreting non-specific statutory language. Accordingly, our "estimates", "suspicions", and "presumptions" whether or not labeled should not be construed as admissions that the activities described took place, or had the described consequences, or that NL is in any way responsible for such activities or consequences. In most such cases, we expressly disclaim responsibility.

Very truly yours,



F. R. Basor

FRB/tb
Enclosures

NL Industries, Inc.
P.O. Box 1090, Hightstown, N.J. 08520 Tel. (609) 443-2411

JUN 12 1981

0000.84

REFERENCE # 2
SITE NAME CARTER WHITE LEAD
SITE ID ILD980265797

Cook Co. - S.F.

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency Washington DC 20460 (02)

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981. Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

IL#37# 810609 ILS-000-001-043

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name NL Industries, Inc.
Street P. O. Box 1090 (Wyckoff Mills Road)
City Hightstown State NJ Zip Code 08520

B Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site NL Industries
Carter White Lead
Street W. Pullman (12042 S. Peoria St.)
City Chicago County Cook State IL Zip Code 60643

ILD980265797

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Baser, F. R., Dir. Environmental Control
Rodman, H. G., Environmental Engineer
Phone 609/443-2411 or 2410

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From Year 1906 To Year 1979

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste: Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

- 1. ☐ Organics
- 2. ☒ Inorganics
- 3. ☐ Solvents
- 4. ☐ Pesticides
- 5. ☒ Heavy metals
- 6. ☐ Acids
- 7. ☐ Bases
- 8. ☐ PCBs
- 9. ☐ Mixed Municipal Waste
- 10. ☐ Unknown
- 11. ☒ Other (Specify)

Paint wastes

Source of Waste: Place an X in the appropriate boxes.

- 1. ☐ Mining
- 2. ☐ Construction
- 3. ☐ Textiles
- 4. ☐ Fertilizer
- 5. ☐ Paper/Printing
- 6. ☐ Leather Tanning
- 7. ☐ Iron/Steel Foundry
- 8. ☒ Chemical, General
- 9. ☐ Plating/Polishing
- 10. ☐ Military/Ammunition
- 11. ☐ Electrical Conductors
- 12. ☐ Transformers
- 13. ☐ Utility Companies
- 14. ☐ Sanitary/Refuse
- 15. ☐ Photofinish
- 16. ☐ Lab Hospital
- 17. ☐ Unknown
- 18. ☒ Other (Specify)

White lead and
Paint mfg.

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste: EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

000262 JUN-981

JUN 12 1981

011013

Notification of Hazardous Waste Site

Side Two

F Waste Quantity

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space, give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) Unknown

Total Facility Waste Amount

Give from Unknown

gallons

Total Facility Area

Give from Unknown

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☒ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

Notification based on presumed storage of waste lead chemicals and paint manufacturing wastes.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name F. R. Baser

Street

City

State

Zip Code

Signature

Fred Baser

Date 6/8/81

- ☐ Owner, Present
☒ Owner, Past
☐ Transporter
☐ Operator, Present
☒ Operator, Past
☐ Other



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

~~IL 123456789~~

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) N.L. Industries

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER

12042 S. Peoria St.

03 CITY
Chicago

04 STATE 05 ZIP CODE
IL 60643

06 COUNTY
COOK

07 COUNTY CODE
031

08 CONG DIST
02

09 COORDINATES LATITUDE

41 40 29.0

LONGITUDE

-87 38 29.0

Gen Highway Map, Cook Co IL, DOT Off of Planning & Prog. Rev 12/31/78.

10 DIRECTIONS TO SITE (Starting from nearest public road)

From loop S on I 94 to I 57. S on I 57 to 119th St Exit. East on 119th Street to Peoria St. S on Peoria to 12042 C on W side of street just N of RR Tracks)

III. RESPONSIBLE PARTIES

01 OWNER (If known)

Unknown

02 STREET (Business, mailing, residential)

03 CITY

04 STATE 05 ZIP CODE

06 TELEPHONE NUMBER

()

07 OPERATOR (If known and different from owner)

Unknown

08 STREET (Business, mailing, residential)

09 CITY

10 STATE 11 ZIP CODE

12 TELEPHONE NUMBER

()

13 TYPE OF OWNERSHIP (Check one)

☐ A. PRIVATE ☐ B. FEDERAL

(Agency name)

☐ C. STATE

☐ D. COUNTY

☐ E. MUNICIPAL

☐ F. OTHER:

(Specify)

☒ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)

☐ A. RCRA 3001 DATE RECEIVED: MONTH DAY YEAR

☒ B. UNCONTROLLED WASTE SITE (CERCLA 103 d)

DATE RECEIVED: 06/12/81 MONTH DAY YEAR

☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 03/27/84 MONTH DAY YEAR

☐ NO

BY (Check all that apply)

☐ A. EPA

☐ B. EPA CONTRACTOR

☒ C. STATE

☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL

☐ F. OTHER:

(Specify)

CONTRACTOR NAME(S):

02 SITE STATUS (Check one)

☐ A. ACTIVE

☒ B. INACTIVE

☐ C. UNKNOWN

03 YEARS OF OPERATION

1906 BEGINNING YEAR

1979 ENDING YEAR

☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Sludges (Toxic/Persistent)
Other Inorganics (Toxic/Persistent)

Heavy Metals (Toxic/Persistent)

RECEIVED

RECEIVED

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Groundwater (Population/Environment)

Direct Contact (Population)

MAY 05 1986

MAY 30 1984

ILL. EPA - D.L.P.C.

STATE OF ILLINOIS

EPA - D.L.P.C.

STATE OF ILLINOIS

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Remedial Action)

☐ A. HIGH

(Inspection required promptly)

☐ B. MEDIUM

(Inspection required)

☒ C. LOW

(Inspect on time available basis)

☐ D. NONE

(No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT

Clifford Gould

02 OF (Agency/Organization)

IEPA/DLPC, Maywood FOS

03 TELEPHONE NUMBER

(312) 345-9786

04 PERSON RESPONSIBLE FOR ASSESSMENT

Clifford Gould

05 AGENCY

IEPA

06 ORGANIZATION

DLPC

07 TELEPHONE NUMBER

(312) 345-9786

08 DATE

03/27/84 MONTH DAY YEAR





POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE
IL

02 SITE NUMBER
0980265797

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 240,000

04 NARRATIVE DESCRIPTION Unknown quantities of heavy metals may leach into the ground and contaminate groundwater.

Area is served by Chicago City Water.

01 ☐ B. SURFACE WATER CONTAMINATION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☒ E. DIRECT CONTACT

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: 240,000

04 NARRATIVE DESCRIPTION See Part 3, II, F below.

01 ☒ F. CONTAMINATION OF SOIL

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL ☐ ALLEGED

03 AREA POTENTIALLY AFFECTED: 22
(Acres)

04 NARRATIVE DESCRIPTION Unknown quantities of toxic or other hazardous constituents may be present in the soil as a result of storage of waste lead chemicals and paint mfg. waste.

01 ☐ G. DRINKING WATER CONTAMINATION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ H. WORKER EXPOSURE/INJURY

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 WORKERS POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ I. POPULATION EXPOSURE/INJURY

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER

IL D98026597

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills, runoff, standing liquids, leaking drums)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 240,000

IV. COMMENTS

This building is being demolished.

V. SOURCES OF INFORMATION (Cite specific references, e. g. state files, sample analysis, reports)

See Part 2, VI.

FILE

September 22, 1986

RECEIVED
Environmental Protection Agency
Enforcement Section

Illinois Environmental Protection Agency
1701 South First Avenue
Maywood, Illinois 60513

DEC 4 1986

1701 FIRST AVENUE
MAYWOOD, ILLINOIS 60153

Attention: Legal Department
Mr. Donald Gimbel

Our File No. 911 L 45 ⁸⁷ 50-6
Our Insured: N L Industries
Claimant: Illinois Environmental Protection Agency
Location of
Property: 12000 to 12054 South Peoria Street
Chicago, Illinois
(Dutch Boy Paint Factory)

Dear Mr. Gimbel:

INA is the general liability insurance carrier for N L Industries. The Illinois Environmental Protection Agency has put our insured on notice of a potential claim for damages as a result of the existence of a potential claim for damages as a result of the existence of lead particles and asbestos particles at the above-captioned location. National Lead Company was the owner of this property from 1937 until approximately December, 1976.

We are beginning an investigation into the above-captioned incident. I have spoke to Mrs. Mary Dinkle of the Illinois Environmental Protection Agency, Land Pollution Department. I have requested some information from her covering the Illinois EPA's investigation into this site. I have requested that she allow us to obtain the entire Illinois EPA's file for our review. After a discussion, she suggested that I speak to you concerning the necessary facts for our investigation.

We are interested in obtaining some information from the Illinois EPA's file. We are specifically interested in determining how this

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RECEIPT OF AGENCY DOCUMENTS

I, _____, acknowledge that on this
 date, I personally appeared in the offices of the Illinois Environmental
 Protection Agency, at ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL
1701 SO. FIRST AVENUE - SUITE 600
MAXWOOD, ILLINOIS 60153

that I requested and received the following Agency files or documents for
 my personal inspection:

203/6005116/COOK

CHICAGO/ DUTCH BOY

I further acknowledge that I have been advised, in writing, that
 certain documents, alleged by the Agency to fall within the exception of
 Ill. Rev. Stat., Ch. 111 1/2, Sec. 1007, have been withheld from my
 inspection; and that I have been given permission to photocopy the list
 of such withheld documents. (Strike and initial if inapplicable)

DATE: 12/9/86

SIGNATURE: Michael J. Pappas / INA

ADDRESS: 8755 W. Higgins Rd
Chicago

TELEPHONE: 380-8357

AG-11-95 (10/76)

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Page 2
September 22, 1986

Illinois Environmental Protection Agency

site became polluted and what type of pollutants are present at this site. Also, we are interested to learn if any pollution has escaped this site, and if so, how much damage has been sustained by the surrounding property.

It is our understanding that the Illinois EPA has been undertaking engineering and remedial studies to determine the scope of the damage at this site. Please advise us as to any preliminary estimates that you may have concerning the identity of the potential responsible parties for the chemical pollution at this site.

I would ask that you contact me at your earliest convenience so that we may discuss this matter in detail or make arrangements for me to review the Illinois EPA file. I can be reached at the above number from 8:00 A.M. to 4:30 P.M. on Tuesdays and Wednesdays. If you are unable to reach me at that time, please leave a message as to when you can be contacted and I will return your call.

Very truly yours,

Michael J. Najewski
Senior Claims Representative

MJN/da

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0316005116 Cook
Dutch Boy Inc.
Superfund

NL

March 2, 1987

Richard Carlson,
Director
Illinois Environmental
Protection Agency
22 Churchill Road
Springfield, Ill. 62706

Attention: Gary King, Esq.

Dear Mr. Carlson:

NL Industries, Inc. ("NL") looks forward to discussing the future remediation of the Dutch Boy Site with you and your staff on March 4, 1987. As you will recall, the Illinois Environmental Protection Agency ("IEPA") requested NL to take certain action with respect to the Immediate Removal Action (Phase II), eventually undertaken by IEPA. It is NL's position that NL is not liable for the response costs involved in Phase I or Phase II. NL is desirous of having the issue of Phase I and Phase II liability resolved as expeditiously as possible. Accordingly, we have formalized this position in the enclosed Memorandum and Technical Report.

We hope that you will have a chance to briefly review these documents prior to our meeting. We realize, of course, that you may not be in a position to reach a conclusion by that time. However, we hope that these documents will be a useful start for evaluating Phase I and Phase II liability.

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MAR -3 1987

IEPA CLPC

NL

We respectfully suggest that the basis for Phase I and Phase II liability, on the one hand, and Phase III, on the other, may be quite different. Accordingly, we think it is appropriate to attempt to dispose of the Phase I and Phase II liability issues at this time.

Respectfully,

Janet D. Smith

Janet D. Smith

JDS:bam

Enclosures

cc: Mr. James Janssen, IEPA
Donald Gimbel, Esq.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:)	
NL INDUSTRIES, INC.,)	
ARTRA GROUP, INC.,)	EPA 7980 HAZ
JOHN HARVEY,)	LPC No. 0316005116
PETER R. HARVEY,)	
AMERICAN NATIONAL BANK TRUST 48495,)	
GOODWILL INDUSTRIES OF CHICAGO,)	
AMERICAN NATIONAL BANK TRUST 55976,)	
JOHN HECKENS,)	
LASALLE NATIONAL BANK TRUST 105679,)	
M&T ENTERPRISES, INC.,)	
LAVON TARR,)	
MARTIN S. BIEBER,)	
RANDALL POLK, D/B/A WRIP WRECKING CO. AND)	
DROVERS BANK OF CHICAGO TRUST 84141)	

NL INDUSTRIES, INC.'S MEMORANDUM OF
LAW IN OPPOSITION TO ASSESSMENT OF
PHASE I AND PHASE II RESPONSE COSTS

PRELIMINARY STATEMENT

NL Industries, Inc. ("NL") has been engaged in discussions with the Illinois Environmental Protection Agency ("IEPA") since July 1986 with respect to NL's liability for certain "response costs" incurred by IEPA. This memorandum seeks to formalize the comments and arguments NL has previously advanced to IEPA.

IEPA, in its July 11, 1986 Notice Pursuant To Section 4(q) Of The Environmental Protection Act (the "IEPA Notice"), has named NL as one of several potentially responsible parties liable under Section 22.2(f) of the Illinois Environmental Protection Act, Ill. Rev. Stat. ch. 111 1/2, paras. 1001 et seq. (1985) (the "Act"), for costs incurred by the State of Illinois in connection with a response action undertaken at the former Dutch Boy facil-

ity in Chicago (the "Site" or "Facility"). Pursuant to a Record of Decision issued by the Director of IEPA on June 6, 1986, IEPA commenced an immediate removal action in order to prevent and/or mitigate the actual or threatened release at the Site of hazardous substances, namely lead and asbestos. (See IEPA Record of Decision, dated June 6, 1986 (the "ROD"), p. 2; IEPA Notice, §V.A.,B.).

IEPA's first step in connection with the immediate removal action was to remove and dispose of lead dust and asbestos from partially demolished structures at the Site, once used for lead and paint manufacturing, and from certain manufacturing equipment. (See ROD, p. 2; Addendum to June 6, 1986 Record of Decision, dated August 25, 1986 (the "ROD Addendum"), p. 1). Upon completion of this portion of the removal action, known as Phase I, IEPA undertook Phase II of the clean-up which included the removal of piles of debris at the Site resulting from ongoing demolition and scavenging. (See ROD Addendum, p. 1).

None of the foregoing activities was necessitated by or can be attributed to NL's disposal, transport, storage or treatment of hazardous substances at the Site at the time of its ownership and operation. (See Ill. Rev. Stat. ch. 111 1/2, para. 1022.2(f)(2) (1985)). Rather, the impetus for the Phase I and Phase II immediate removal actions undertaken by IEPA derived solely from the acts and omissions of third parties not employed by or in privity with NL. Such third parties include approximately ten owners and operators of the Facility and demolition

contractors and scavengers who failed to comply with applicable environmental laws, to exercise due care and to take necessary precautions with respect to raw materials, process equipment and building insulation materials prior to and in the course of demolition, thereby causing the releases cited by IEPA. (See Ill. Rev. Stat. ch. 111 1/2, para. 1022.2(j)(1)(C) (1985)).

Under these circumstances, NL cannot and should not be held responsible for the costs of the Phase I and Phase II response actions. In addition, because NL did not cause the releases for which the immediate removal actions were undertaken, it had sufficient cause not to provide the response sought in the IEPA Notice. It would, therefore, be improper and unlawful to assess punitive damages against NL as a result of its refusal to comply with IEPA's request. (See Ill. Rev. Stat. ch. 111 1/2, para. 1022.2(k) (1985)). Finally, even if IEPA could successfully reach NL for reimbursement of its response costs, its expenditures could not be recovered in full because IEPA failed to act reasonably, based on the evidence before it, in undertaking the removal actions and thereby incurred unnecessary and excessive costs.¹

¹ The principal arguments set forth herein were presented to IEPA by NL staff counsel Janet D. Smith at an August 20, 1986 meeting at IEPA's offices in Springfield, attended by a principal of ARTRA Group, Inc. and its counsel, counsel for LaVon Tarr, counsel for NL, and IEPA representatives, including Director Richard Carlson, Deputy Director Del Haschemeyer, counsel Gary King, and Jim Frank, Jim Janssen and Mary Dinkel. Ms. Smith had previously espoused some of these positions during a July 9, 1986 telephone conversation with IEPA attorney Donald Gimbel, approximately one week after IEPA first advised NL by telephone of environmental problems at the Site. On September 11, 1986, a

SUMMARY OF FACTS

The facts set forth herein are primarily drawn from documents and other materials provided by IEPA, most of which were in the possession of IEPA at the time it engaged in its immediate removal actions. The accompanying report of NL's consultant, Toxcon Engineering Company ("Toxcon"), entitled "Investigation of the Former Dutch Boy Site" (the "Toxcon Study"), analyzes technical data, also provided by IEPA, which was largely available to IEPA even prior to the issuance of the ROD Addendum.

NL's Ownership And Divestiture Of The Site

NL acquired the Site from the Carter White Lead Company in the early 1900's. Throughout its ownership, NL manufactured a variety of oxidized lead products, in particular, lead paint and other paint-related products.

Pursuant to a Purchase Agreement executed on December 10, 1976, NL sold the Facility to ELT, Inc., whose name was subsequently changed to Dutch Boy, Inc. and later to ARTRA Group, Inc. (hereinafter referred to as "ARTRA"). In addition to purchasing the real property and improvements owned by NL and used in the operation of NL's Dutch Boy Paints Division in Chicago,

representative of NL and its consultant, Toxcon Engineering Company, met with IEPA to discuss a clean-up protocol they had devised with respect to the Site. The protocol was memorialized in a report submitted to IEPA on September 29, 1986. (See accompanying "Investigation of the Former Dutch Boy Site", Toxcon Engineering Company, p. 5, and Appendix D thereto).

ARTRA purchased all appurtenant raw materials, work-in-progress, and finished goods. The plant inventory typically included white, blue and grey lead, cans of paint suitable for resale, linseed oil and paint thinner. (See Purchase Agreement, dated December 10, 1976 (the "Purchase Agreement"), §1(a), p. 2). (Relevant portions of the Purchase Agreement are annexed hereto as Ex. "A").

At the time NL sold the Facility, it was, to the best of NL's knowledge, in compliance with all environmental laws, regulations and rules. (Purchase Agreement, §7(1), p. 22). ARTRA agreed to assume, however, all obligations existing as of or arising after the sale which pertained to the Site's compliance with "all federal and state laws and administrative regulations and rulings relating to environmental protection." (Purchase Agreement, §4(a)(3), pp. 7-8). Only such obligations of NL which were required to have been performed or fulfilled prior to the sale of the Facility were excluded from ARTRA's assumption of obligations. Thus, as of December 10, 1976, ARTRA became solely responsible for all raw materials, paint inventory and paint manufacturing wastes, if any, whether they were disposed of, transported, stored, treated or otherwise used by NL at the Site.

Subsequent Ownership And Use Of The Site

After its acquisition of the Facility, ARTRA continued to manufacture paints and related products, and generated or stored lead-bearing wastes. (See, e.g., IEPA Notice, §III.B.; Letter date stamped September 28, 1982 from the United States

Environmental Protection Agency ("USEPA") to Dutch Boy, Inc. [ARTRA]). ARTRA's charitable conveyance in or about December 1980 to the American National Bank and Trust Company of Chicago ("ANB&T"), in trust for Goodwill Industries of Chicago ("Goodwill Industries"), was the first in the rapid succession of conveyances of the Site that occurred between 1980 and 1984. (IEPA Notice, §III.C.). ARTRA's charitable conveyance also marked the end of all paint-related operations, or any other known business operations, at the Site.

In December 1982, Mr. John Heckens, the beneficial owner of Goodwill Industries' conveyance in trust to ANB&T in October 1982, conveyed to LaSalle National Bank, in trust for M&T Enterprises, Inc. ("M&T Enterprises"), not only the Site, as defined herein, but a second adjacent parcel never owned by NL. (IEPA Notice, §III.D.,E.). The second parcel is also the subject of IEPA's response action. (IEPA Notice, §III.E.,G.).

In November 1984, M&T Enterprises conveyed both parcels to Drovers Bank of Chicago in trust for LaVon Tarr, a corporate officer and shareholder of M&T Enterprises. LaVon Tarr continues to be the beneficial owner of both parcels of property (IEPA Notice, §III.F.) and has stated his intention to use the property to construct housing.² (See IEPA Inter-Office Memorandum dated May 8, 1986 from Mary Dinkel to Jim Janssen).

² During the August 20, 1985 meeting with IEPA in Springfield, Thomas Boodell, Esq., LaVon Tarr's attorney, reiterated his client's intention to develop the Site.

The Release Of Lead And Asbestos

In or about 1983, during the period M&T Enterprises was the beneficial owner of both the Site and the adjacent parcel, demolition of certain structures on the Site was commenced. Wrecking operations, by demolition crews and scavengers, continued on the Site for at least three years. (See IEPA Notice, §III.G.; ROD Addendum, p. 1). Throughout this time, the demolition contractor, Randall Polk d/b/a Wrip Wrecking Company, and scavengers had a legal duty to follow requisite work practices relating to the removal of asbestos, set forth in applicable National Emission Standards for Hazardous Air Pollutants ("NESHAPS"), 40 C.F.R. Part 61, Subpart M, promulgated pursuant to the federal Clean Air Act, 42 U.S.C. §7412. The regulations, and governing case law, also required the owners, M&T Enterprises and LaVon Tarr, to notify USEPA that asbestos removal activity was being undertaken at the Site, and to ensure that the contractors and scavengers acted lawfully and responsibly in connection with the removal of asbestos. (See, e.g., 40 C.F.R. §61.146 et seq. and discussion, infra, at Point 1).

It appears, however, that M&T Enterprises and LaVon Tarr did not ensure their contractors' compliance with the law and applicable regulations. (See Toxcon Study, pp. 8-9). Neither the contractors, scavengers or owners undertook to clear out raw materials or to clean up and remove paint manufacturing equipment abandoned there by ARTRA in 1980. (See Toxcon Study, p. 9). The apparently unlawful and inadequate demolition practices at the

Site, even according to IEPA's own documents, allegedly caused particles containing lead, and insulation containing asbestos, to become airborne and to collect on the buildings and ground of both parcels of the Site. (IEPA Notice, §III.G.; ROD. See also Toxcon Study, pp. 8-9).

The ill effects of the scavengers' and wrecking crews' work practices were aggravated by ARTRA's failure to take appropriate measures to prevent or mitigate the release of hazardous substances when it ceased operations and conveyed the parcel to ANB&T in trust for Goodwill Industries. (See Toxcon Study, p. 9). Because it was foreseeable that Goodwill Industries would not continue manufacturing operations at the Site, ARTRA should have cleaned up the paint manufacturing equipment and cleaned out the raw materials and products at the Site when it donated the Site to charity. Had ARTRA done so, and exercised the requisite due care with respect to the hazardous substances present at the Site in 1980, lead-bearing particles would not have collected on the building and grounds during demolition "in such quantities and physical state such that they became airborne." (IEPA Notice, §III.G.; Toxcon Study, pp. 8-9). Indeed, had any owner after 1976 exercised due care with respect to the lead-bearing materials abandoned at the Site, or had the demolition contractors and scavengers adequately prepared the Site for demolition and conducted demolition in accordance with applicable laws, the releases of lead and asbestos which ultimately caused IEPA to

undertake the Phase I and Phase II response actions would not have occurred. (Toxcon Study, p. 9).

IEPA's Immediate Removal Action

In the ROD, the Director of IEPA determined that "immediate removal actions" were "justified" and that such actions would "mitigate the immediate and significant risk of harm to human health and the environment." In so declaring, the Director authorized the "remov[al] and disposal of surficial solids suspected and known to contain lead and/or asbestos." (ROD, p. 2). In the ROD Addendum, the Director further authorized, based upon the same determinations, the removal of all debris and what appears to be a full scale immediate clean-up program. (ROD Addendum, p. 1).

In accordance with the RODs, IEPA has removed and disposed of lead dust and asbestos offsite at a hazardous waste landfill, and has similarly removed and disposed of debris. The disposal of all such materials at a hazardous waste landfill was undertaken at considerable expense. (See, e.g., ROD, p. 2; ROD Addendum, p. 2; Toxcon Study, p. 14). IEPA has estimated the total response action to cost approximately \$3,000,000. (See ROD, p. 2; ROD Addendum, p. 2).

The Immediate Removal Actions Undertaken Not Warranted

After receiving the IEPA Notice, NL retained Toxcon to assess conditions at the Site and any releases of hazardous substances from the Site, and to evaluate the nature and extent of the immediate removal actions undertaken by IEPA and those

actions that were proposed to be undertaken. (Toxcon Study, p. 1). Toxcon found, based upon the information IEPA had provided, that, contrary to the determination in the RODs, the data that was available to IEPA prior to undertaking the Phase II response action, indeed, prior to the issuance of the ROD Addendum, did not support a finding of an imminent threat to the health or the environment of the surrounding community, and moreover, that costly offsite disposal of all materials at a hazardous waste landfill was not warranted. (Toxcon Study, pp. 2-3, 10-12, 16). Toxcon's analysis of such data disclosed that soil samples taken offsite showed that no lead had migrated offsite by airborne routes.³ (Toxcon Study, pp. 10-12). This finding supported another Toxcon finding, also drawn from IEPA data apparently available prior to the issuance of the ROD Addendum and the commencement of the Phase II removal action, that blood lead levels were elevated in only five individuals, two scavengers and their invitees, who had prolonged and direct exposure to the Site.

Based upon the foregoing, Toxcon concluded that the immediate removal actions undertaken by IEPA were unnecessary and that, as NL had urged IEPA prior to the Phase II response action,

³ Only two of the twenty offsite samples contained elevated levels of lead. "However, it is Toxcon's opinion, taking into account the levels of lead in these two samples and their location directly adjacent to an urban roadway, that these results do not demonstrate the offsite migration of lead from the Dutch Boy site. These levels could have been caused by the deposit of lead from automobile exhaust emissions." (Toxcon Study, p. 10).

other measures could have been employed which would have both mitigated any potential health risks and been more cost-effective. (Toxcon Study, pp. 11-12, 16). Thus, a seal order and fencing of the property would have been sufficient to avert health risks by preventing entry onto the Site by neighborhood people and unauthorized workers. (Toxcon Study, p. 12). Then, planned and cost-effective clean-up operations could have begun, rather than the unplanned and excessively costly operations undertaken by IEPA based upon, among other things, inadequate sampling and analysis of data. (Toxcon Study, pp. 12-15).

For example, IEPA did not sample "in accordance with accepted environmental sampling procedures" (Toxcon Study, p. 13), and it did not properly analyze, or it ignored, sampling data. (Toxcon Study, p. 14). As a result, large piles of waste and trash on the Site were simply deemed to be hazardous and were disposed of at a hazardous waste landfill. The removal and disposal of all of the wastes and debris at a hazardous waste landfill, however, was not supported by the data provided to Toxcon. Consequently, IEPA's failure to segregate hazardous wastes from non-hazardous wastes in order to minimize the use of hazardous waste landfills and, thereby, substantially reduce costs, resulted in wasteful and excessive expenditures totalling at least as much as \$130,000.⁴ (Toxcon Study, p. 14). Other

⁴ Segregation of hazardous wastes from non-hazardous wastes had also been strongly recommended to IEPA by NL's representative and its consultant, Toxcon, prior to the commencement of the Phase II response action. (See Toxcon Study, Appendix D).

examples of unnecessary expenditures resulting from inadequate sampling and analysis of data are set forth in the Toxcon Study. (See Toxcon Study, pp. 12-15).

POINT I

NL BEARS NO RESPONSIBILITY FOR THE RELEASE OF LEAD OR ASBESTOS

IEPA seeks to utilize the Act's extraordinary strict liability provisions to recover costs from NL, although the State's expenditures in connection with the Phase I and Phase II removal actions had nothing whatsoever to do with any "release" by NL. Rather, the Phase I removal and disposal of lead dust and asbestos, and the Phase II removal of debris and waste (see p. 2, supra), were undertaken solely because of releases caused by the unlawful demolition practices of M&T Enterprises, LaVon Tarr, Randall Polk and other wrecking crews and scavengers, and the negligent and inadequate environmental housekeeping of ARTRA and subsequent owners.

Costs Of Response Incurred As A Result Of Release Of Lead Solely Attributable To Acts And Omissions Of Third Parties

There is no evidence that on-site disposal of lead-bearing materials or wastes occurred during NL's ownership of the Site, nor are there any allegations that there was a release or substantial threat of a release of lead during the period of NL's ownership. (See Toxcon Study, pp. 2, 6-7). The only release of lead that has been identified and for which the State has incurred costs, relates to particles of lead which allegedly became airborne and settled on buildings and the grounds of the Site during the years of demolition undertaken by M&T Enterprises, LaVon Tarr, Randall Polk and various other wrecking crews and

POINT II

IEPA'S EXPENDITURES ARE NOT FULLY RECOVERABLE SINCE IT FAILED TO ACT REASONABLY IN IMPLEMENTING THE REMOVAL ACTIONS

Even if IEPA were entitled to recover the costs of the Phase I and Phase II remedial actions from NL, it would not be entitled to recover the full sum expended. In the exercise of its authority to undertake response actions, IEPA is obliged to act reasonably and in accordance with the manifest weight of the evidence. (See Ill. Rev. Stat. ch. 110, para. 274 (1981). Cf. Industrial Park Development Company v. The Environmental Protection Agency, 604 F. Supp. 1136 (E.D. Pa. 1985) (EPA may not act in an arbitrary and capricious manner in connection with removal action under CERCLA)). Here, based upon the information and data before it, IEPA failed to act reasonably with respect to major portions of the removal action and, consequently, incurred excessive and unnecessary additional costs that it now seeks to pass along to, among others, NL.

In order to conduct an immediate removal action, there must first be a determination that there is an "immediate and significant risk of harm to human life or health or to the environment...." (Illinois Hazardous Substances Pollution Contingency Plan, Ill. Admin. Code Title 35, §750.430(a), as amended (1985)). Although IEPA did make such a determination (see ROD, p. 2; ROD Addendum, p. 2), it was made contrary to the manifest weight of the evidence (Toxcon Study, pp. 11-12), and despite

ment", or absent a determination that off-site removal will be more cost-effective than other remedial actions or will create new capacity to manage hazardous substances. (Ill. Rev. Stat. ch. 111 1/2, para. 1003(xx) (1985)). Because IEPA did not make, or cannot justify on the evidence that was before it, any of the determinations necessary under Section 3(xx) for incurring the expense of off-site disposal, IEPA's actions in this regard were inconsistent with a claim for recovery of off-site disposal costs under the Act. Under the circumstances, the responsible parties should not have to bear the costs of IEPA's unreasonable and unwarranted removal actions.

CONCLUSION

Based on the foregoing, it is respectfully submitted that IEPA (a) find that NL is not responsible for the release of the hazardous substances described in the IEPA Notice; and (b) withdraw its claim for (i) recovery of costs incurred in connection with the Phase I and Phase II response actions, and (ii) punitive damages.

Dated: New York, New York,
March 2, 1987

SIVE, PAGET & RIESEL, P.C.

By: 

Daniel Riesel

460 Park Avenue
New York, New York 10022
(212) 421-2150

Of Counsel:
Robin E. Rosenberg

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An Alternative
Remedial Investigation/Remedial Action Plan
for the
Plant Site at 120th and Peoria Streets
in Chicago, Illinois

Prepared by

Toxcon Engineering Company
14925-A Memorial Drive
Houston, Texas 77079
(713) 870-0115

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Background

The plant site at 120th and Peoria streets in Chicago has been identified by the Illinois EPA (IEPA) as one requiring remedial efforts because of the presence of elevated levels of lead and asbestos. The scope of the IEPA site investigation has been limited. The IEPA has performed preliminary sampling which indicates that some of the demolition rubble and soils on the northern part of the property contain elevated levels of lead. In addition, some of the demolition rubble and some of the process equipment in the 3 story structure on the site contain elevated levels of lead. Spot tests have confirmed the presence of small quantities of asbestos pipe and asbestos pipe insulation.

IEPA has obtained quotes for the removal and disposal as hazardous waste of the demolition rubble, buildings, foundations, and all other materials on the site. The cost of treating all materials on this site as hazardous waste as estimated by IEPA is \$2.1 to \$2.7 million.

Alternate Plan

Proposed herein, on behalf of NL Industries, is an alternate approach to clean up this site which incorporates a streamlined phased remedial investigation and remedial action plan (RI/RA).

The objectives of the suggested cleanup plan are as follows:

- 1) Conduct a streamlined phased remedial investigation to define scope and extent of the necessary remedial action.
- 2) Segregate the hazardous wastes from the non-hazardous wastes to minimize usage of hazardous waste landfill capacity.
- 3) Design the RI/RA to be cost effective, technically feasible, and environmentally sound.
- 4) Commence remedial action in 1986.
- 5) Insure that the cleanup protocol does not include demolition expense which can be borne by the site owners.

Plan Phases

The general approach suggested is a phased RI/RA as follows:

- 1) Mini-RI
- 2) Removal of nonhazardous materials
- 3) Removal of hazardous wastes and underground tanks
- 4) Building decontamination
- 5) Verification sampling
- 6) Decision regarding groundwater monitoring
- 7) Return responsibility of site to owners

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The seven phases listed are discussed in more detail below.

Phase 1 - Mini RI

A streamlined investigation is recommended. The property could be divided into about 100 grids and each grid could be composite sampled. In addition, specific waste piles on the south and west yards could be composite sampled. The composite samples from each grid or each pile should consist of at least 5 grab samples from the grid (or pile) mixed together. These samples should be analyzed for EP Toxicity for lead only.

The liquids in the underground storage tanks should be sampled with a COLIWASA to insure that all strata in the tanks are discovered. The liquid samples should be analyzed for pH, water content, flash point, and chlorinated solvents.

It is estimated that 100 - 150 samples would be required to adequately characterize the materials on site. With a rapid laboratory response, results from the Mini RI could be available in 15 days from the time sampling begins.

Phase 2 - Removal of nonhazardous materials

The materials in areas where the grid and pile samples do not indicate hazardous levels of lead may be disposed in a municipal landfill. The removal of this material should begin immediately after the results of the Mini RI are available. During the removal of the nonhazardous materials, personnel and ambient air monitoring for lead should be performed.

The timing of this step is dependent on the amount of waste determined to be nonhazardous. If all of the rubble in the west and south yards were nonhazardous, Phase 2 should require 3 to 4 weeks to implement.

Phase 3 - Removal of hazardous wastes and underground tanks

After the completion of the removal of nonhazardous materials, the hazardous wastes should be removed and disposed. At this time, the liquids from the underground tanks should be removed and the tanks themselves should be excavated and disposed. In addition, the process equipment and rubble piles in the 3 story structure should be removed and disposed. The standing structures and foundations will not be removed.

As in Phase 2, personnel and ambient air monitoring should be performed during Phase 3. The site should be sprayed with water as required to minimize the generation of dust.

The contents of the storage tanks should be recycled if appropriate. In addition, the storage tanks should be sold for scrap value if they are clean. If the underground storage tanks are not clean, they should either be cleaned or treated as industrial waste and properly managed.

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If the rubble in the north yard and the liquids in the underground tanks are the only hazardous wastes, Phase 3 could be implemented in 4 to 5 weeks.

Phase 4 - Building Decontamination

The 3 story structure and any other structures standing should be steam cleaned and water blast cleaned as required to remove any product or waste residues. During this cleaning procedure the area around the structure being cleaned should be enclosed in a dike and any water generated should be collected and treated prior to discharge. The required treatment system will probably consist of pH adjustment, clarification, and filtration.

Any residue or sludges cleaned from the buildings or collected in the water treatment system should be disposed as hazardous waste.

Phase 5 - Verification Sampling

Verification sampling of soils should be performed with a grid pattern across the entire site. Cores may be dug through foundations and samples taken at appropriate grid points.

The verification sampling should consist of about 150 samples. These samples should be analyzed for EP Toxicity lead. At any grid point where hazardous waste is indicated (EP Tox lead > 5.0 mg/l), additional soil should be removed until the soil in the grid does not contain hazardous waste.

Phase 6 - Decision regarding groundwater monitoring

At this point, all wastes will have been removed from the site and the decision whether to implement a groundwater monitoring plan should be made based on the extent to which the elevated lead levels extended vertically in the soil.

Phase 7 - Return responsibility of property to landowners

If the decision is made that no groundwater investigation is required, the remedial action would be complete and further demolition or disposal would be performed by the landowners without IEPA expense or involvement.

Potential Savings

There are two principal areas where savings might be realized in this proposed plan versus the plan proposed in the IEPA's RFQ.

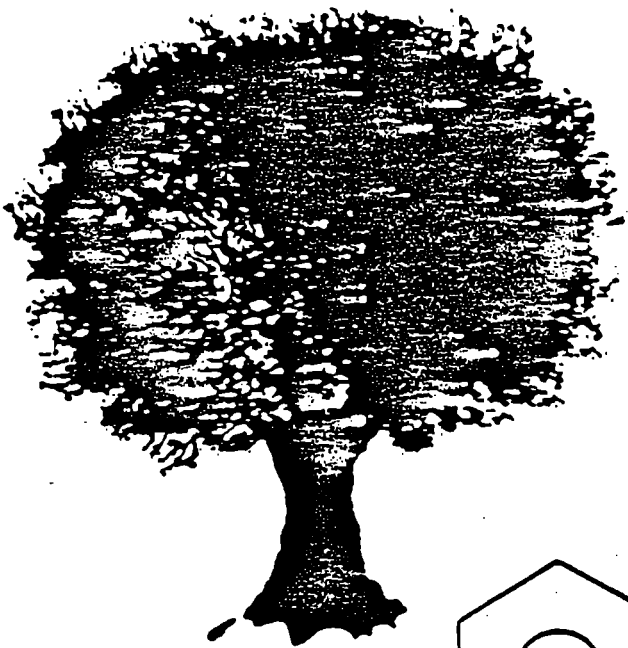
Decontamination of the buildings on the site and returning the property to the landowners could save about \$500,000 compared to the demolition and disposal contemplated in the RFQ.

Characterization of all wastes on site will result in savings if some of the wastes can be designated as nonhazardous materials. Disposal of the solid waste as hazardous waste costs \$100 more

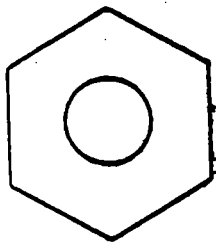
per cubic yard than disposal as municipal waste. If most or all of the material in the west and south yards could be disposed as municipal waste, a savings of about \$500,000 would be realized.

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Toxcon Engineering Company



INVESTIGATION OF
THE FORMER DUTCH BOY SITE
120TH AND PEORIA STREETS
CHICAGO, ILLINOIS

Prepared by
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14925A Memorial Drive
Houston, Texas 77079

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PRC00532

INTRODUCTION

Toxcon Engineering Company ("Toxcon") was retained by NL Industries, Inc. ("NL") in July, 1986 (1) to assess conditions at the former Dutch Boy site situated at 120th and Peoria Streets, Chicago, Illinois (the "site" or the "facility") and any releases of hazardous substances from the site; and (2) to evaluate the nature and extent of the immediate removal action undertaken by the Illinois Environmental Protection Agency ("IEPA"), and the actions that were, at that time, proposed by IEPA.

In June, 1986, IEPA had carried out a limited immediate removal action at the site, designated Phase I. The Phase I immediate removal action involved the removal of allegedly hazardous substances from the site, at a cost of approximately \$180,000. Subsequently, beginning in November, 1986, IEPA continued its immediate removal action at the site, designating its work as Phase II of the action. Phase II entailed the continuing removal of demolition debris, machinery, residues and other materials from the site, at a cost estimated at \$2.7 million.

Toxcon's investigation and analysis included a review of documents provided by IEPA and NL, including memoranda, reports, sampling and analytical data, and site drawings. The investigation also encompassed four site visits in July, September, and December, 1986, and in January, 1987, as well as interviews with agency personnel, and participation in meetings with IEPA and NL personnel.

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SUMMARY

The following conclusions are based upon Toxcon's review of documents, investigations of the site and interviews:

- 1) In 1976, at the time NL sold the facility to the company that later became known as ARTRA Group, Inc. ("ARTRA"), there was no release or threat of release of the hazardous substances described in IEPA's July 11, 1986 notification pursuant to Section 4(q) of the Illinois Environmental Protection Act.
- 2) There is no evidence that on-site disposal of lead-bearing materials or wastes occurred during NL's ownership of the site.
- 3) The releases of lead and asbestos at the site as of July 17, 1986 were caused by the uncontrolled salvaging and demolition of the buildings at the site beginning in 1983. Contributing to the release of lead at the site was its abandonment by ARTRA, with no clean up of manufacturing equipment or residues.
- 4) The finding of IEPA that the conditions at the site posed an "immediate and significant risk of harm to human health and the environment" is unsupported by the information available to Toxcon.
- 5) A streamlined, phased remedial investigation should have been conducted by IEPA to permit the design and implementation of

a cost-effective and technically and environmentally sound cleanup.

- 6) The Phase II cleanup implemented by IEPA was not conducted in accordance with accepted environmental sampling practices and was not cost-effective.

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DISCUSSION

Background

Robert Finkelstein (Curriculum Vitae, Appendix A) of Toxcon visited the former Dutch Boy site on July 17, 1986, September 10, 1986, December 30-31, 1986 and January 13, 1987. The site visits in July and September were designed to assist NL Industries in formulating a position in response to the 4(q) notice issued by IEPA. The focus of the site visits in December, 1986 and January, 1987 was to observe Phase II of the immediate removal action performed by IEPA and its contractor.

The July visit confirmed that extensive scavenging and demolition efforts had occurred at the site, to devastating effect. Drawing DBP-001, in Appendix B, depicts the configuration of the site as it existed during manufacturing, prior to the commencement of demolition activities. By July, 1986, approximately two-thirds of the processing buildings depicted on DBP-001 had been demolished. The demolished buildings included all of Building 5, except for a 3-story facade along Peoria and 120th streets. In addition, Buildings 2, 2A, and 4 were partially demolished. The rest of the buildings on the site were 95% razed.

In July, 1986, there were baghouses and process vessels on the ground in the area where Building 5 formerly stood. Many process vessels were visible in the remaining portions of Buildings 2 and 4. Some of these process vessels contained a white residue which was probably a lead-bearing material. The areas where buildings

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had been razed contained piles of rubble from the demolition.

Buildings 2 and 4 contained some insulated piping which was partially demolished. IEPA determined, based upon sampling performed in May, 1986, that the insulation material contained friable asbestos.

Some of the insulated piping in Buildings 2 and 4 was not demolished. This intact insulated piping appeared to be about the same age as the other insulated piping. Based on the age and appearance of this intact insulated piping, it was probably also covered with asbestos containing insulation. Toxcon also observed, lying on the ground near the area where Building 5 had formerly stood, piping with similar insulating material. Photos of the insulated piping as well as the entire plant site are included in Appendix C.

Based upon Toxcon's observations, its review and analysis of data between July and September, 1986, and discussions with NL, a site cleanup protocol was devised. After a site visit on September 10, 1986, NL and Toxcon presented the suggested protocol to IEPA at a meeting on September 11, 1986, and memorialized it in a report submitted to IEPA on September 29, 1986 (Appendix D).

After the submission of the Toxcon site cleanup protocol, NL heard nothing from IEPA for two months. Accordingly, an attorney for NL telephoned IEPA and was informed on December 11, 1986, that the Phase II immediate removal action had been underway since November 18, 1986. At that time, NL asked Toxcon to return to the site to observe the activities of IEPA and its

contractor.

Thus, Toxcon undertook a third site visit on December 30-31, 1986. During this visit, the activities of Haztech, Inc., the contractor retained by IEPA to perform the Phase II immediate removal action, were observed. Photographs of the operations and site conditions during this visit are included in Appendix E.

A fourth site visit occurred on January 13, 1987, during which Toxcon observed continuing work on the Phase II immediate removal action. Pictures of the plant site on this date are included in Appendix F.

As discussed more fully below, Toxcon's observations during the December, 1986 and January, 1987 site visits, and its review of information furnished by IEPA, revealed that IEPA adopted some, but not all, of the recommendations made in the September, 1986 Toxcon report.

Analysis

1. The Uncontrolled Demolition Activities Caused the Release of Hazardous Substances On the Site

Documents reviewed by Toxcon and discussions with NL personnel revealed that NL operated the plant primarily as a white lead production and paint manufacturing facility until 1976 and sold it as a "going concern". There is absolutely no evidence that onsite disposal of hazardous substances had occurred during NL ownership of the property, or that any act or omission of NL

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during its ownership caused the releases described in IEPA's 4(q) notice. In sharp contrast, there is extensive evidence that the conditions at the site that became of concern to IEPA in 1986 were caused by the uncontrolled salvaging and demolition activities conducted from 1983 until 1986. A review of the evidence follows:

- A) A review of the plant layout shown in drawing DBP-001 (Appendix B) shows that the main processing buildings were Building 2, mill, Building 2A, storage, Building 4, paint plant, and Building 5, corroding galleries, corroding cylinders, and oxide department.

Buildings 2 and 5 comprised the portion of the plant that was primarily used to produce white lead. It is reasonable to expect that residues remaining in any of the processing vessels or dust collectors in these buildings would have high total lead and high EP toxicity lead levels.

Building 4 was the paint plant where vehicle and pigment were mixed to produce various paints. After NL's sale of the plant in 1976, ARTRA produced many varieties of paints in Building 4. Residues remaining in any of the processing vessels or dust collectors in this building might have high total lead and high EP toxicity lead levels.

The rest of the buildings on the plant housed support elements such as maintenance shops, warehouses, linseed

oil and fuel oil storage tanks, steam boilers, offices, and locker rooms. These buildings would not be expected to contain any residues of lead during operation or after shutdown of the facility.

- B) Toxcon's July and December, 1986 and January, 1987 site visits revealed no evidence that on-site disposal of lead bearing materials or wastes had occurred prior to the commencement of demolition activities.
- C) Toxcon's initial site inspection and subsequent discussions with IEPA revealed that some of the baghouses and process tanks in the north yard, where Building 5 had stood, and in Building No. 2 contained white residues that may have contained high lead levels. (Note: References to the north, south, and west yards are used to describe general geographic areas of the site). Much of the process equipment that had no value was left in the rubble in the north yard. Some of this process equipment had residues of lead and this lead was spread throughout the rubble when the process equipment was opened. Once the lead is commingled with masonry rubble, it cannot be economically separated.
- D) The demolition and salvaging on the plant were performed by several different contractors from 1983 until 1986 and was apparently not controlled by the property owners. Because no controls were enforced on the contractors, the residues inside process equipment, the lead dust inside

the buildings, and the asbestos contained in the insulation material were allowed to spread when the equipment was removed and when entire floors were demolished to salvage the steel, process equipment, piping, and bricks.

If the buildings of the plant had been properly prepared prior to salvaging and demolition operations, the Phase I and II immediate removal actions undertaken by IEPA would not have been necessary. Proper preparation of the buildings for salvaging and demolition would have included removal of all raw materials and tank residues, removal of asbestos pipe and asbestos pipe insulation in accordance with applicable law, and water blast cleaning of walls and floors where appropriate.

E) Total lead and EP toxicity lead data collected by the IEPA is summarized on Drawing DBP-002 in Appendix A. This figure is based upon a sketch provided by IEPA. The locations of the offsite samples and the samples in the west and south yards were drawn directly on the sketch by IEPA. These samples were taken in November, 1986. The locations of the samples in the north yard were transposed by Toxcon from a document provided by IEPA. These samples were taken on May 16, 1986. Toxcon recorded EP toxicity lead levels on the figure next to each sample point. The data on Drawing DBP-002 indicates the following:

- i) Drawing DBP-002 indicates the location and analytical results of the most recent offsite samples taken by IEPA. Of twenty offsite soil samples taken by IEPA, only two contain significant levels of lead. However, it is Toxcon's opinion, taking into account the levels of lead in these two samples and their location directly adjacent to an urban roadway, that these results do not demonstrate the offsite migration of lead from the Dutch Boy site. These levels could have been caused by the deposit of lead from automobile exhaust emissions.

In addition, IEPA performed offsite sampling in June, 1986 at receptors, in the vicinity of the site, that were of particular concern from a public health perspective, a school and a meat packing plant. This sampling indicated insignificant levels of lead in the soils at the school on 122nd Street, southwest of the site, and in the soils near the meat packing plant, north of the site.

- ii) EP Toxicity lead levels in the rubble on the plant decrease from the north yard to the south yard. The EP Toxicity lead values were highest, as would be expected, in the rubble in the north yard where Building 5 formerly stood. EP Toxicity lead levels in the west yard are well below the levels in the north yard. EP Toxicity lead levels in the south yard, in the area where Building 10A, the warehouse

formerly stood, are non-hazardous.

The foregoing factors lead to the conclusion that the lead was spread throughout the rubble from the north end of the plant towards the south end of the plant by the demolition and salvaging process and not by the routine white lead and paint manufacturing operation. In addition, Toxcon concludes that the spread of asbestos throughout the site was caused by the demolition and salvaging of the piping.

2. The Site Was Never An Immediate and Significant Risk to Health and the Environment

The immediate removal action carried out by IEPA was based upon IEPA's determination that the conditions at the site posed an "immediate and significant risk of harm to human health and the environment." In fact, that determination is not supported by the facts.

IEPA's soil samples taken off-site overwhelmingly demonstrate that no lead has migrated from the site even after almost three years of uncontrolled demolition activities. This includes samples taken from the soils on streets surrounding the plant, from soils at the school on 122nd street to the southwest of the site, and from soils near the meat packing plant to the north of the site.

It is Toxcon's understanding that a community wide blood sampling effort was mounted by State and local health departments involving the collection and analysis of blood from hundreds of persons living in the vicinity of the site. According to IEPA,

no community residents had elevated blood lead levels.

Blood lead levels were found to be elevated in only five individuals, all of whom had prolonged, direct contact with the demolition debris on the site. The blood lead levels of all five persons returned to normal after their removal from the site. Thus, it appears unequivocally that direct contact with the demolition debris on the site was necessary before elevated blood lead levels occurred.

It is Toxcon's position, based upon evaluation of the results of the off site soil sampling and the community blood lead sampling program that the site did not pose an imminent and significant risk to human health or the environment. Securing the site with a fence would have stopped human contact with the demolition debris and would have prevented any jeopardy to human health and the environment.

3. The Phase II Cleanup Was Not Conducted in Accordance With Accepted Environmental Sampling Practices

It appears that the on-site sampling that was performed was not performed in accordance with EPA SW-846, "Test Methods for Evaluating Solid Waste". IEPA's chain of custody forms and correspondence indicate that the original onsite sampling that was performed in the north yard consisted of samples taken to determine whether the material in the rubble and in the process vessels contained lead. These samples were not randomly taken. Rather, some of the samples were taken directly from residues in

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process equipment on the ground and some were simply wipe samples from structural beams.

In addition, samples of the waste piles were not composites. In some cases the samples were surface samples taken in the top 0 to 2 inches of rubble or soil. This sampling procedure was not in accordance with accepted environmental sampling procedures and could generate biased results. The sampling of waste piles in this manner does not yield a representative sample and, for this reason, the results might be erroneous. This sampling technique might result in the incorrect characterization of a waste pile as hazardous. If a waste pile is improperly designated as hazardous waste, the cost for disposal of that pile would be very expensive.

A more complete site investigation would have included a three dimensional simple random sampling strategy for the waste piles. This strategy is discussed in SW-846, section 1.4.3. It involves dividing the waste piles into three dimensional grids, assigning numbers to the grids, and choosing sampling points using random number tables. Some of the piles at the plant site might have been difficult to sample in this manner, but many of the piles were readily accessible.

4. Because IEPA Failed to Conduct a Streamlined, Phased Remedial Investigation and Failed to Segregate the Wastes, the Cleanup Was Not Cost Effective

In the September, 1986 submission, Toxcon recommended that a streamlined, phased remedial investigation be conducted prior to further response action at the site in order to define the scope

and extent of the response action and to shape a cost effective and technically and environmentally sound cleanup. The primary objective of such an approach is to allow careful reasoned evaluation of sampling data collected and to take the data into account in crafting a remedy. A second recommendation of Toxcon's submission was to segregate the hazardous waste from the nonhazardous waste in order to minimize the costly use of a hazardous waste landfill. A third recommendation was to insure that IEPA not spend funds for demolition expenses that could be borne by the site owners.

Although IEPA did apply the third recommendation by decontaminating the buildings with a high pressure water blaster in order to mitigate any threat of a release of a hazardous substance, thereby enabling the site owners to demolish the buildings without IEPA involvement, it did not sufficiently follow through with Toxcon's other recommendations. A review of the data in Drawing DBP-002 suggests that a section at least 65 feet wide along the southern edge of the plant site did not contain debris with EP toxic lead levels. Nonetheless, during the Phase II cleanup, this fact was apparently ignored and all the rubble in this area was removed and disposed of as hazardous waste. This area contained approximately 1320 cubic yards of rubble. The disposal of this rubble as hazardous waste cost at least \$150,000. Removal of the rubble to a municipal landfill may have required special permission, but would have saved about \$130,000.

As discussed in the preceding section, if IEPA had undertaken a more complete site investigation, including random composite sampling of the rubble piles on site, in accordance with accepted environmental sampling principles, an accurate and thorough characterization of the site would have emerged. Thus, if IEPA had undertaken its response action after a thorough and careful collection and evaluation of data representative of the conditions at the site, it is possible that some of the waste that was disposed of at a hazardous waste landfill could have been classified as non-hazardous waste and could have been disposed of very inexpensively.

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CONCLUSION

At the time NL sold the facility to ARTRA in 1976, there was no release or threat of release of the hazardous substances described in IEPA's July 11, 1986 4(q) notification. There is also no evidence that on-site disposal of lead-bearing materials or wastes occurred during NL's ownership of the site.

Unquestionably, the releases of lead and asbestos at the site as of July 17, 1986 were caused by the uncontrolled salvaging and demolition of the buildings at the site beginning in 1983.

Elevated blood lead levels appeared in only five persons having prolonged and direct exposure to the site, and there was no evidence of offsite migration of lead. Thus, IEPA's conclusion that the conditions at the site posed an "immediate and significant risk of harm to human health and the environment" is not supported by the information available to Toxcon.

Finally, a streamlined, phased remedial investigation should have been conducted by IEPA to permit the design and implementation of a cost effective and technically and environmentally sound cleanup.

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*Environmental
Engineering*

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Toxcon Division

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**Engineering
Company**

PHASE III SITE INVESTIGATION PLAN
FOR THE
DUTCH BOY PAINT PLANT SITE
LOCATED AT
120TH AND PEORIA STREETS
CHICAGO, ILLINOIS

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Prepared by

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Houston, Texas 77079
(713) 870-0115

N. 0222

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TAB 1: SAMPLING PLAN

TAB 2: QUALITY ASSURANCE PROJECT PLAN

TAB 3: SITE SAFETY PLAN

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SITE SAMPLING PLAN

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SAMPLING PLAN

PHASE III SITE INVESTIGATION

DUTCH BOY PAINT PLANT SITE

CHICAGO, ILLINOIS

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I. Background

The Illinois EPA (IEPA) has conducted its Phase II remedial action at the former Dutch Boy Paint Plant site at 120th and Peoria Streets in Chicago. All solid wastes, demolition debris, and all liquid wastes in underground storage tanks have been removed and disposed except the following:

- 1) Residues of linseed oil were left in the four storage tanks located in the Mill Building basement (see Dwg DBP-001).
- 2) An area approximately 80 feet long by 20 feet wide located where the Boiler Room used to be (see Dwg DBP-001) contains demolition debris. IEPA believes this debris may be 10-15 feet thick. IEPA was unable to remove this waste in Phase II because of equipment limitations.
- 3) An area approximately 70 feet long by 30 feet wide where the Locker Room used to be (see Dwg DBP-001) is covered with demolition debris.
- 4) The southeast corner of the property contains large piles of debris not generated from the site.

II. Objectives of the Phase III Site Investigation

- 1) Define the nature and extent of lead that may exist in the soil at the site and adjacent properties.
- 2) Determine if asbestos is present in the surface samples at the south end of the site.
- 3) Determine the level of volatile organics in the soils surrounding the underground storage tanks by sampling subsurface soils near the tanks and analyzing the samples for volatile organic compounds.

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III. General

- 1) All on-site and off-site Phase III sampling will be performed by or under the supervision of a Registered Professional Engineer who will be the Project Manager.
- 2) Prior to on-site investigations, the site will be surveyed and permanent markers will be established.
- 3) A written safety plan will be followed for all on site activities. The project safety plan is included under Tab 3.
- 4) All sampling and analytical work will be performed in accordance with procedures outlined in EPA SW-846, "Test Methods for Evaluating Solid Waste".
- 5) Toxcon Engineering Company's QAPP Plan is attached. Two IEPA Contract Laboratories will perform all analytical work.

Aqualab Inc.	Daily Analytical Laboratories
850 West Bartlett Road	1621 West Candletree Drive
Bartlett, Illinois 60103	Peoria, Illinois 61614
(312) 289-3100	(309) 692-5252

In accordance with IEPA's Contract Laboratory Program, both laboratories have filed extensive QAPP's with IEPA.

- 6) The IEPA project manager will be given reasonable notice of all field work, including initial survey work as well as actual sampling.
- 7) The project manager will afford IEPA an opportunity to obtain split samples.
- 8) Both IEPA and the project manager may make reasonable field adjustments with respect to the work in progress.

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IV. Sampling Protocol

The following summarizes the field sampling procedures and sample handling procedures that will be used in the Phase III Site Investigation. Actual sampling locations are discussed in Section V.

A) Sampling Devices/Techniques

Both surface and subsurface samples will be taken during this investigation.

Surface samples will be taken using a hand trowel. All surface samples will be composite samples consisting of at least 4 individual samples taken within a 4 foot radius of a central point.

Subsurface samples will be taken using either a split-spoon sampler or a Shelby tube sampler.

A split-spoon sampler will be used if the soils to be sampled are largely composed of compressible fill material. A stainless steel or brass liner will be placed inside the split-spoon sampler and the sampler will be driven into the soil. The split-spoon will be extracted from the soil and the liner will be removed. The sample will be inside the liner. The ends of the liner will then be closed with plastic caps.

A Shelby tube sampler will be used if the material to be sampled is not readily compressible. The Shelby tube is first advanced hydraulically into the soil and then it is extracted with the sample inside. The sample is then extruded from the Shelby tube onto a cardboard container. The sides and ends of the extruded sample will be cut off and the portion of the sample remaining is saved as the sample to be analyzed. The sides and ends are cut off of the extruded sample to ensure that the sample retained for analysis is undisturbed and not contaminated by surface materials or by materials clinging to the walls of the Shelby tube.

The split spoon sampler or Shelby tube sampler will be thoroughly cleaned after every use. The samplers will receive a detergent wash and a clean water rinse.

B) Sample Containers

Samples taken for VOC analysis will be stored in 40 ml glass vials with Teflon lined septum caps. Samples taken for asbestos analysis will be stored in whirl packs.

All other samples taken with the Shelby tube and all other surface samples will be stored in glass or polyethylene jars with screw-type lids.

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All other samples taken with a split spoon sampler will be stored in the brass or stainless steel liner if a liner is used. If a liner is not used with the split-spoon sampler, the samples will be stored in glass or polyethylene jars with screw-type lids.

C) Sample Preservation

Samples taken for volatile organic compounds (VOC) determination require special preservation. VOC samples will be stored in glass containers and cooled to 4 degrees centigrade from the time of collection until the samples are prepared for analysis at the laboratory.

D) Chain of Custody Procedures

i) Sample Labels

Gummed paper labels will be filled out and affixed to the sample container at the time of sample collection. The label will include the following information:

- Sample Number
- Name of Collector
- Date and Time of Collection
- Place of Collection

ii) Sample Seals

Gummed paper seals will be affixed to the sample container in such a way that it is necessary to break the seal to open the sample container. The seal will include the following information:

- Sample Number (identical to the number on the sample label)
- Collector's Name
- Date and Time of Sampling

iii) Field Book

A field log book will be kept by the Project Manager. The book will be bound and will contain the following:

- Purpose of sampling
- Location of sampling points
- Name and address of field contacts
- Number and volume of sampling points and sampling methodology
- Dates and times of collection of samples
- Collector's sample identification numbers
- Sample distribution and how transported (e.g., name of laboratory, UPS, Federal Express)
- References such as maps or photographs of the sampling site

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- Field observations
- Any field measurements made
- Special handling and preservation techniques
- Signatures of personnel responsible for observations

The log book will be protected and kept with the Project Manager.

iv) Chain of Custody Record

To establish the documentation necessary to trace sample possession from the time of collection, a Chain of Custody record will be filled out and will accompany every sample. A copy of the Chain of Custody record to be used is attached as Figure 1.

V. Proposed Site Sampling and Analysis

Sampling locations and sample depths are based on site history, as reflected in available diagrams of the plant, and IEPA's preliminary sampling results. In addition, sampling procedures, locations, and depth are dependent on the specific objectives being considered. Note that all proposed sampling locations are approximate. Actual sample location will be as close to the indicated locations as field conditions allow.

The proposed site sampling described below is divided according to the objective that the sampling addresses.

- A) Objective: Define the nature and extent of lead that may exist in the soil at the site and adjacent properties.

Thirty-six (36) locations will be sampled.

Twenty-one (21) on-site locations will be sampled (see Sampling Points 1-21, Dwg DBP-002). Shelby tube samples or split spoon samples will be taken at intervals of 0-1 feet, 3-4 feet and 6-7 feet. Therefore, a total of three samples will be taken at each location. Dry auger techniques will be used to core between sampling intervals. Where concrete, asphalt or demolition debris is present on top of native soils, the first sample will be taken 0-1 feet below the concrete, asphalt or demolition debris.

Nine (9) off-site locations will be sampled (see Sampling Points 22-30, Dwg DBP-002). Shelby tube samples or split-spoon samples will be taken at intervals of 0-1 feet and 1-2 feet.

Aqualab Inc. will prepare and analyze the samples for total lead and EP Toxicity lead using CLP furnace methods and protocols and SW-846 Method 1310. Samples will be analyzed one stratum at a time. Initially, the samples taken in the 0-1 foot interval will be analyzed. The second stratum samples will be analyzed only at locations where the 0-1 foot interval samples indicate elevated lead levels. The third stratum samples will be analyzed only at locations where the second stratum indicated elevated levels of lead.

Six (6) off site locations will be sampled for background analysis. At locations two blocks north, east and south of the site, a surface soil sample and a road dirt sample will be taken. Aqualab Inc. will prepare and analyze all six samples for total lead and EP Toxicity lead using CLP furnace methods and protocols and SW-846 Method 1310.

All 36 boreholes will be back grouted immediately after all samples have been taken.

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- B) Objective: Determine if asbestos is present in the surface soils at the south end of the site.

Ten (10) on-site locations will be sampled (see Sampling Points 1-10, Dwg DBP-002). Surface samples will be taken using the trowel method described previously. All ten samples will be analyzed for the presence of asbestos using the Asbestest field test kit. Vendor's literature describing the Asbestest field test kit is included as Attachment C. Samples that indicate the presence of asbestos will be further analyzed by Daily Analytical Laboratories for asbestos using CLP methods and procedures.

- C) Objective: Determine the level of volatile organics in the soils surrounding the underground storage tanks.

Sixteen (16) on-site locations will be sampled (see Sampling Points 35-50, Dwg DBP-003). Dry auger techniques will be used to drill to a depth of 15 feet. Shelby tube samples or split-spoon samples will be taken in the interval 15-16 feet.

Five composite samples will be made from the 16 samples. The composite samples will be taken as follows:

- Composite #1 - Equal portions of samples 35, 36, 37, 38
- Composite #2 - Equal portions of samples 39, 40, 41, 42
- Composite #3 - Equal portions of samples 43, 44, 45, 46
- Composite #4 - Equal portions of samples 45, 46, 47, 48
- Composite #5 - Equal portions of samples 47, 48, 49, 50

These composite samples will be preserved by cooling the samples to 4 degrees centigrade and maintaining this temperature until the samples are prepared at the laboratory.

Aqualab Inc. will prepare and analyze each composite sample for volatile organic compounds using CLP methods and protocols.

All 16 boreholes will be back grouted immediately after all samples have been withdrawn.

Safety Note: As a safety precaution, an HNU Model PI-101 portable trace gas analyzer will be used during this sampling to measure soil vapors and determine whether significant volatile organics are present.

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D) Objective: Site Characterization.

Four (4) on-site locations will be sampled for site characterization (see Dwg DBP-002). In each of the four corners of the site, samples will be taken in the 0-1 foot interval. Samples will be taken with a split-spoon sampler, a Shelby tube sampler, or a hand auger. Aqualab Inc. will prepare and analyze each sample, using CLP methods and protocols, for the following metals:

Arsenic	
Barium	
Cadmium	
Chromium	
Copper	
* Lead	* CLP furnace method for low lead concentration ($5 \mu\text{g/l}$) and CLP digestion procedure will be used to prepare sample. e a
Mercury	
Nickel	
Selenium	
Silver	
Zinc	

VI. Report

A report on the Phase III Site Investigation will be provided. This report will contain a copy of the site survey, the results of all laboratory analyses, and a description of the field sampling.

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CHAIN OF CUSTODY FORM

TWC PERMIT NO. _____

EPA PERMIT NO. _____

OTHER _____

FIELD INFORMATION AND ANALYSES

POINT OF COLLECTION _____

DATE _____ TIME _____ COLLECTOR _____

TYPE OF SAMPLE _____

OBSERVATIONS _____

LABORATORY ANALYSES

TRANSMITTAL

SIGNATURE OF COLLECTOR _____ DATE _____ TIME _____

SIGNATURE OF COURIER _____ DATE _____ TIME _____

SIGNATURE OF COURIER _____ DATE _____ TIME _____

SIGNATURE OF LABORATORY
REPRESENTATIVE _____ DATE _____ TIME _____

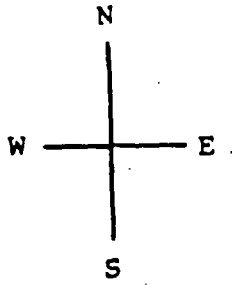
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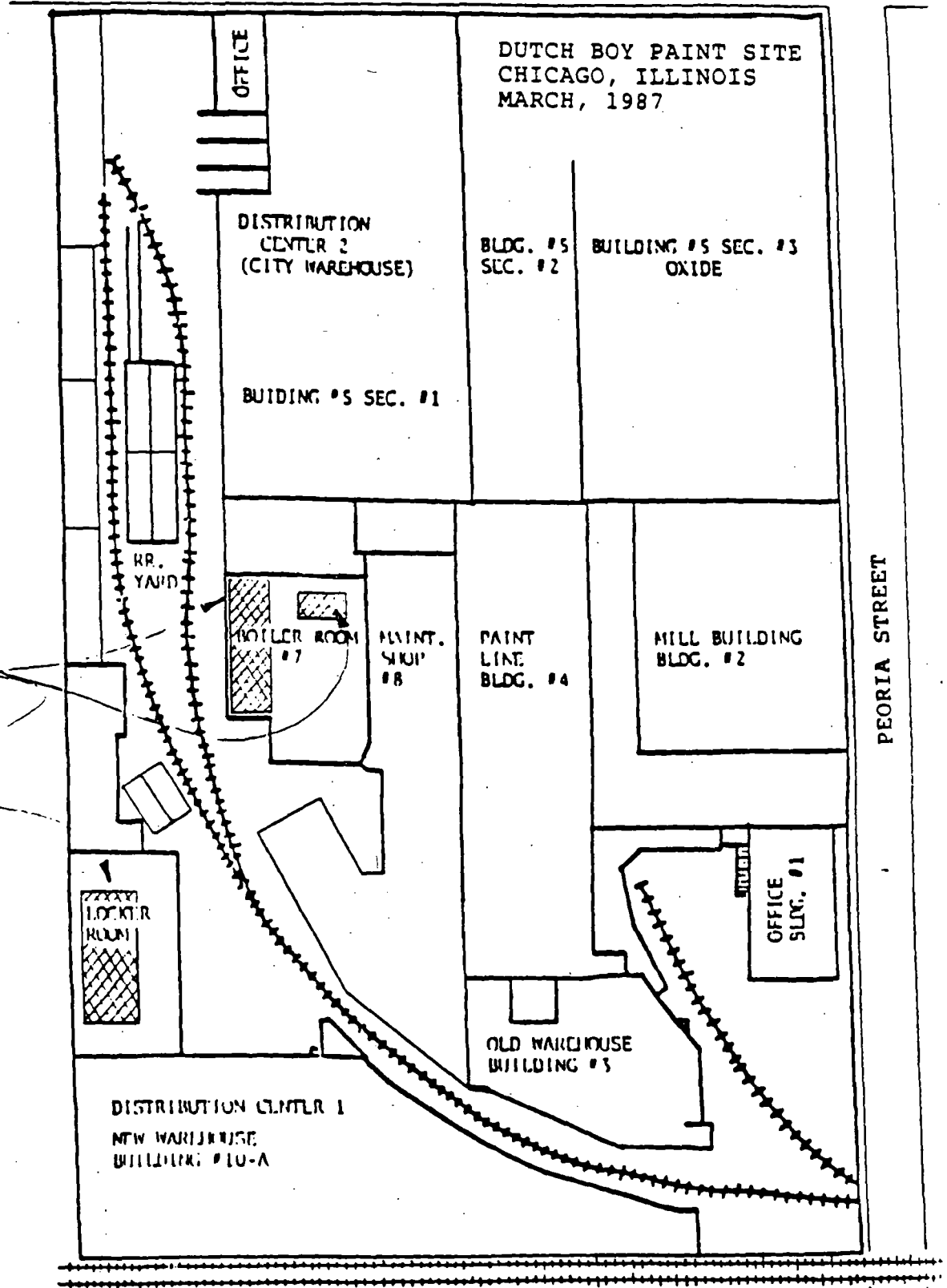
FIGURE 1

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120th STREET



DEMOLITION
DEBRIS



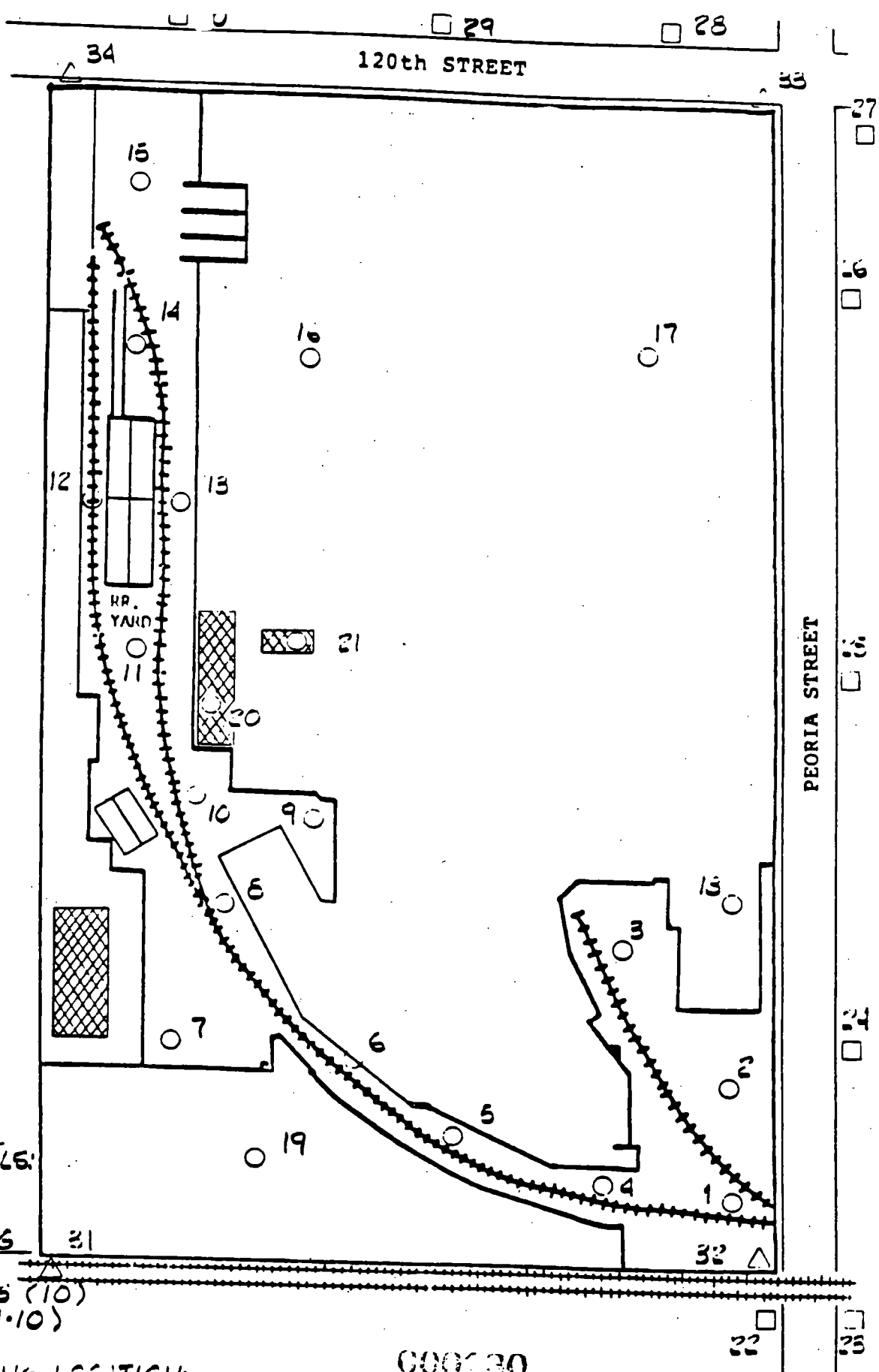
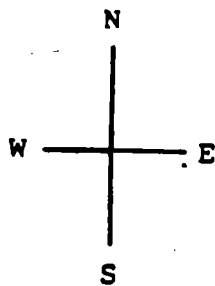
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AREAS CONTAINING DEBRIS

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FIGURE 1
DBP-001



TOTAL METALS
SAMPLING LOCATIONS
 - SAMPLING INTERVALS:
 0-1', 1-2'

PESTICIDES SAMPLING
LOCATIONS

)- SURFACE SAMPLES (10)
 (SAMPLE POINTS 1-10)

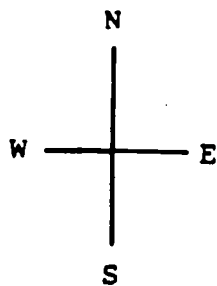
LEAD SAMPLING LOCATIONS
)- ON-SITE LOCATIONS (21); SAMPLE POINTS 1-21
 SAMPLING INTERVALS: 0-1', 3-4', 6-7'

)- OFF-SITE LOCATIONS (9); SAMPLE POINTS 22-30
 SAMPLING INTERVALS: 0-1', 1-2'

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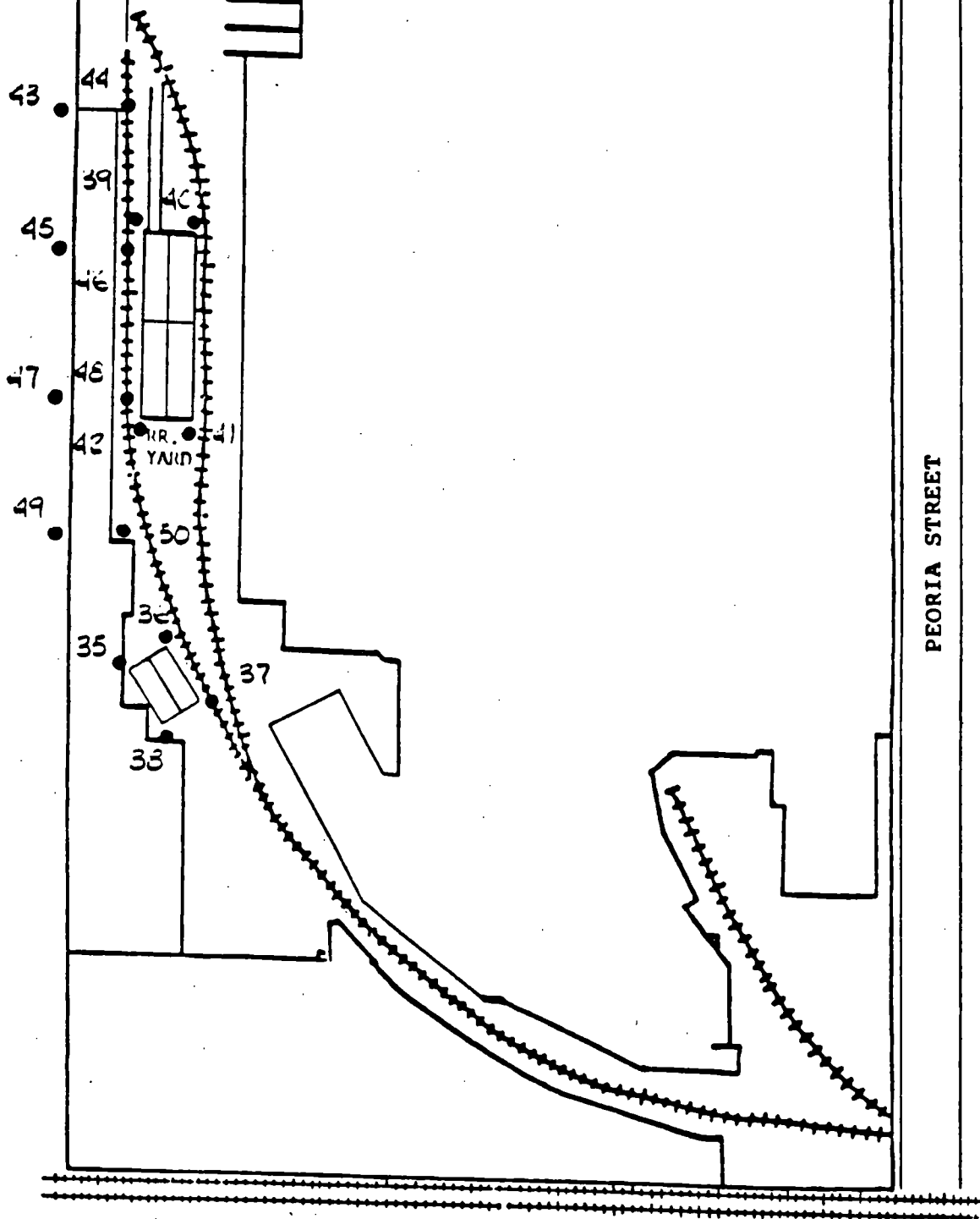
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D3P-CC2



120th STREET

DUTCH BOY PAINT SITE
CHICAGO, ILLINOIS
MARCH, 1987



ORGANICS SAMPLING LOCATIONS

16 ON-SITE LOCATIONS
SAMPLING INTERVAL: 15-16'

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DBP-003

QAPP

600232

N 0239

QUALITY ASSURANCE PROJECT PLAN (QAPP)

PHASE III SITE INVESTIGATION

DUTCH BOY PAINT PLANT SITE

CHICAGO, ILLINOIS

APPROVALS:

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY
REMEDIAL PROJECT MANAGER

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY
QUALITY ASSURANCE OFFICER

Date: _____

Date: _____

TOXCON ENGINEERING CO.
PROJECT OFFICER/QUALITY
ASSURANCE OFFICER

Robert Linklater
Date 6/4/87

Prepared By:

Toxcon Engineering Company
14925-A Memorial Drive
Houston, Texas 77079
(713) 498-7916
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copies: Mary Dinkel, IEPA Project Officer
Bina Shah, IEPA Quality Assurance Officer
Fred Baser, NL Industries Project Officer
Robert Finkelstein, Toxcon Project Officer

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SECTION 1: INTRODUCTION

Toxcon Engineering Company of Houston, Texas is designing and coordinating the Phase III Site Investigation Plan of the Dutch Boy Paint Plant Site in Chicago, Illinois. NL Industries is the funding company.

The purpose of this Quality Assurance Project Plan (QAPP) is to assure the Illinois Environmental Protection Agency (IEPA) that Toxcon Engineering Company will responsibly implement procedures which will assure and document the precision, accuracy and representativeness of the data obtained during the Phase III Site Investigation. For this reason, Toxcon Engineering Company will be directly responsible for all site sampling, and will contract all laboratory work to two IEPA Contract Laboratories :

Aqualab Inc.
850 West Bartlett Road
Bartlett, Illinois 60103
(312) 289-3100

Daily Analytical Laboratories
1621 West Candletree Drive
Peoria, Illinois 61614
(309) 692-5252

Both Aqualab Inc. and Daily Analytical Laboratories have been selected as Contract Laboratories by IEPA. In accordance with the Contract Laboratory Program, both Aqualab Inc. and Daily Analytical Laboratories have filed extensive Quality Assurance Project Plans (QAPP) with IEPA. All samples taken during the Phase III Site Investigation will be analyzed in accordance with the procedures outlined in these IEPA approved QAPP's.

Under the Contract Laboratory Program, Aqualab Inc. and Daily Analytical Laboratory provide analytical services for three activities: Emergency Response, the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Clean Illinois Program relating to hazardous waste sites. As Contract Laboratories, both Aqualab Inc. and Daily Analytical Laboratories have provided analytical services for IEPA during earlier clean-up efforts at the Dutch Boy Paint Plant Site in Chicago, Illinois.

(Note: The Aqualab Inc. Contract Laboratory Service Quality Assurance Project Plan is attached as Appendix A.)

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SECTION 2: PROJECT DESCRIPTION

The subject of this Quality Assurance Project Plan (QAPP) is the Phase III Site Investigation of the Dutch Boy Paint Plant Site in Chicago, Illinois. The objectives of the Phase III Site Investigation are as follows:

- (1) Define the nature and extent of lead that may exist in the soil at the site and adjacent properties.
- (2) Determine if asbestos is present in the surface soil samples at the south end of the site.
- (3) Determine the level of volatile organic compounds in the soils surrounding the underground storage tanks.
- (4) Characterize the site.

Discussions of specific sampling procedures and locations, as well as sample analyses, follow in this QAPP.

Toxcon Engineering Company and NL Industries will undertake this effort as soon as IEPA approves the Sampling Plan, QAPP and Site Safety Plan. This effort will take approximately 8-10 days on-site, approximately one month for sample analyses, and approximately one month for reporting.

Data obtained in the Phase III Site Investigation will be used to plan the next phase of site clean-up.

SECTION 4: QUALITY ASSURANCE OBJECTIVES FOR MEASUREMENT DATA IN TERMS OF PRECISION, ACCURACY, COMPLETENESS, REPRESENTATIVENESS, AND COMPARIBILITY

Same as outlined in QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 5: SAMPLING PROCEDURES

Sampling locations and sample depths are based on site history, as reflected in available diagrams of the plant, and IEPA's preliminary sampling results. In addition, sampling procedures, locations, and depths are dependent on the specific objectives being considered. Note that all proposed sampling locations are approximate. Actual sample location will be as close to the indicated locations as field conditions allow.

Both surface and subsurface samples will be taken during this investigation.

Surface samples will be taken using a hand trowel. All surface samples will be composite samples taken within a 4 foot radius of a central point.

Subsurface samples will be taken using either a split-spoon sampler or a Shelby tube sampler.

A split spoon sampler will be used if the soils to be sampled are largely composed of compressible fill material. A stainless steel or brass liner will be placed inside the split-spoon sampler and the sampler will be driven into the soil. The split-spoon will be extracted from the soil and the liner will be removed. The sample will be inside the liner. The ends of the liner will then be closed with plastic caps.

A Shelby tube sampler will be used if the material to be sampled is not readily compressible. The Shelby tube is first advanced hydraulically into the soil and then it is extracted with the sample inside. The sample is then extruded from the Shelby tube onto a cardboard container. The sides and ends are cut off of the extruded sample to ensure that the sample retained for analysis is undisturbed and not contaminated by surface materials or by materials clinging to the walls of the Shelby tube.

The split spoon sampler or the Shelby tube sampler will be thoroughly cleaned after every use. The samplers will receive a detergent wash and a clean water rinse.

Specific site sampling procedures described below are divided according to the objective that the sampling addresses.

- (A) Objective: Define the nature and extent of lead that may exist in the soil at the site and adjacent properties.

Thirty-six (36) locations will be sampled.

Twenty-one (21) on-site locations will be sampled (see Sampling Points 1-21, Dwg DBP-002 in Appendix C). Shelby tube samples or split spoon samples will be taken at intervals of 0-1 feet, 3-4 feet and 6-7 feet. Therefore, a total of three samples will be taken at each location. Dry auger techniques will be used to core between sampling intervals. Where concrete, asphalt or demolition debris is present on top of native soils, the first sample will be taken 0-1 feet below the concrete, asphalt or demolition debris.

Nine (9) off-site locations will be sampled (see Sampling Points 22-30, Dwg DBP-002 in Appendix C). Shelby tube samples or split-spoon samples will be taken at intervals of 0-1 feet and 1-2 feet.

Six (6) off-site locations will be sampled for background analysis. At locations two blocks north, east and south of the site, a surface soil sample and road dirt will be taken.

Samples will be stored in glass or polyethylene jars with screw-type lids that will be provided by Aqualab Inc. Prior to the containers arriving on-site, the containers will have been cleaned and prepared in accordance with procedures outlined in SW-846. No special sample handling or preservation is required. An Aqualab Inc. courier will be on-site to transport the samples directly to the laboratory. Chain-of-custody procedures outlined in Section 6 of this document will be adhered to.

Aqualab Inc. will prepare and analyze the samples for total lead and EP Toxicity Lead using CLP furnace methods and protocols and SW-846 Method 1310. Samples will be analyzed as soon as Aqualab Inc. can process them. All samples will be analyzed within 28 days of collection.

- (B) Objective: Determine if asbestos is present in the surface soils at the south end of the site.

Ten (10) on-site locations will be sampled (see Sampling Points 1-10, Dwg DBP-002 in Appendix C). Surface samples will be taken using a hand trowel.

Samples will be stored in whirl bags. All samples will be tested for the presence of asbestos using the Asbestest field test kit. Vendor's literature describing the Asbestest field test kit is included as Appendix B. Samples indicating the presence of asbestos will be further analyzed.

An Aqualab Inc. courier will transport the samples to the Aqualab Inc. laboratory. Aqualab Inc. will send the samples to Daily Analytical Laboratories via UPS for analyses. Chain-of-custody procedures outlined in Section 6 of this document will be adhered to.

Daily Analytical Laboratories will prepare and analyze the samples for asbestos using CLP methods and protocols. No special sample handling or preservation is required. Samples will be analyzed within 28 days.

- (C) Objective: Determine the level of volatile organic compounds in the soils surrounding the underground storage tanks.

Sixteen (16) on-site locations will be sampled (see Sampling Points 35-50, Dwg DBP-003 in Appendix C). Dry auger techniques will be used to drill to a depth of 15 feet. Shelby tube samples or split-spoon samples will be taken in the interval 15-16 feet.

Five composite samples will be made from the 16 samples. The composite samples will be taken as follows:

Composite #1 - Equal portions of samples 35, 36, 37, 38
Composite #2 - Equal portions of samples 39, 40, 41, 42
Composite #3 - Equal portions of samples 43, 44, 45, 46
Composite #4 - Equal portions of samples 45, 46, 47, 48
Composite #5 - Equal portions of samples 47, 48, 49, 50

Samples will be stored in 40 mL vials with Teflon lined septum caps provided by Aqualab Inc.

Prior to arriving on location, the containers will have been cleaned and prepared in accordance with the procedures outlined in SW-846. Samples will be handled with care so as not to drive off volatile organic compounds.

Samples will be preserved by cooling the samples to 4 degrees Centigrade, and maintaining this temperature until the samples are prepared for analysis at the laboratory. An Aqualab Inc. courier will be on location to receive the samples and transport them to the laboratory for analyses. Chain-of-custody procedures outlined in Section 6 of this document will be adhered to.

Aqualab Inc. will prepare and analyze each composite sample for volatile organic compounds using CLP methods and protocols. Samples will be analyzed as soon as possible after arrival at Aqualab Inc. No samples will be held in excess of 10 days.

(D) Objective: Site Characterization.

Four (4) on-site locations will be sampled for site characterization (see Dwg DBP-002 in Appendix C). In each of the four corners of the site, samples will be taken in the 0-1 foot interval. Samples will be taken with a split-spoon sampler, a Shelby tube sampler, or a hand auger.

Samples will be stored in glass or polyethylene jars with screw-type lids and will be provided by Aqualab Inc. Prior to the containers arriving on-site, the containers will have been cleaned and prepared in accordance with procedures outlined in SW-846. No special handling or preservation is required. An Aqualab Inc. courier will be on-site to transport the samples directly to the laboratory. Chain-of-custody procedures outlined in Section 6 of this document will be adhered to.

Aqualab Inc. will prepare and analyze the samples for total metals using CLP methods and protocols (see Section 8 for details). Samples will be analyzed as soon as Aqualab Inc. can process them. Analyses will be complete in 28 days.

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SECTION 6: SAMPLE CUSTODY

Sample Custody will be tracked using the following:

1) Sample Labels

Gummed paper labels will be filled out and affixed to each sample container at the time of sample collection. The label will include the following information:

- Sample Number
- Name of Collector
- Date and Time of Collection
- Place of Collection

2) Sample Seals

Gummed paper seals will be affixed to the sample container in such a way that it is necessary to break the seal to open the sample container. The seal will include the following information:

- Sample Number (identical to that on the sample label)
- Collector's Name
- Date and Time of Collection

3) Field Book

A field log book will be kept by the Project Manager. The book will be bound and will contain the following:

- Purpose of sampling
- Location of sampling points
- Name and address of field contacts
- Number and volume of sampling points and sampling methodology
- Dates and times of collection of samples
- Collector's sample identification numbers
- Sample distribution and how transported (e.g., name of laboratory, UPS, Federal Express)
- References such as maps or photographs of the sampling site
- Field observations
- Any field measurements made
- Special handling and preservation techniques
- Signatures of personnel responsible for observations

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The log book will be protected and kept with the Project Manager.

4) Chain of Custody

To establish the documentation necessary to trace sample possession from the time of collection, a Chain of Custody record will be filled out and will accompany every sample. A copy of the Chain of Custody record to be used is attached as Figure 1 in Appendix C.

At Aqualab Inc. and Daily Analytical Laboratory a responsible party will act as custodian of the laboratory sample. They will sign the Chain of Custody forms, date them and verify the data entered onto the sample custody records. At Aqualab, this representative will be Lorrie Krebs and/or Bob Bucaro. At Daily Analytical Laboratory, the representative will be Steve Zajicek.

For laboratory tracking procedures, see QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as Federal Contract Laboratories by IEPA.

SECTION 7: CALIBRATION PROCEDURES AND FREQUENCY

An HNU Model PI-101 portable trace gas analyzer will be used while drilling and sampling soils near the underground storage tanks.

The HNU PI-101 photo-ionizer will be calibrated daily with air and 100 ppm isobutylene (mimics benzene) span gas. A cylinder of 23 liters of the span gas, enough for 40-50 calibrations, will be kept on-site for more frequent calibrations, if deemed necessary. The span gas cylinder will be purchased from HNU Systems Inc. of Newton Highlands, Massachusetts.

SECTION 8: ANALYTICAL PROCEDURES

Analytical procedures are outlined according to the objective that the sampling addresses.

- (A) Objective: Define the nature and extent of lead that may exist in the soil at the site and adjacent properties.

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Aqualab Inc. will prepare and analyze the samples for total lead and EP Toxicity lead using CLP furnace methods and protocols and SW-846 Method 1310. Samples will be analyzed one stratum at a time. Initially, the samples taken at the 0-1 foot interval will be analyzed. The second stratum of samples will be analyzed only at locations where the 0-1 foot interval samples indicate elevated lead levels. The third stratum samples will be analyzed only at locations where the second stratum indicated elevated levels of lead.

Samples will be analyzed as soon as Aqualab Inc. can process them. Though the samples can be held for up to six months (according to SW-846), samples analyses will be complete within 28 days of collection.

- (B) Objective: Determine if asbestos is present in the surface soils at the south end of the site.

Daily Analytical Laboratories will prepare and analyze the samples for asbestos within 28 days of collection using CLP methods and protocols.

- (C) Objective: Determine the level of volatile organics in the soils surrounding the underground storage tanks.

Aqualab Inc. will prepare and analyze each composite sample for volatile organic compounds within 10 days of collection using CLP methods and protocols.

- (D) Objective: Site Characterization.

Aqualab Inc. will prepare and analyze each sample, using CLP methods and protocols, for the following metals:

Arsenic
Barium
Cadmium
Chromium
Copper
* Lead
Mercury
Nickel
Selenium
Zinc

* CLP furnace method for low lead concentration ($5 \mu\text{g/l}$) and CLP digestion procedure will be used to prepare sample.

Samples will be analyzed as soon as Aqualab Inc. can process them. All analyses will be complete within 28 days of collection.

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SECTION 9: DATA REDUCTION, VALIDATION AND REPORTING

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 10: INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 11: PERFORMANCE AND SYSTEM AUDITS AND FREQUENCY

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 12: PREVENTATIVE MAINTENANCE PROCEDURES AND SCHEDULES

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 13: SPECIFIC ROUTINE PROCEDURES TO BE USED TO ASSESS DATA PRECISION, ACCURACY AND COMPLETENESS OF SPECIFIC MEASUREMENT PARAMETERS INVOLVED

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 14: CORRECTIVE ACTION

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

SECTION 15: QUALITY ASSURANCE REPORTS TO MANAGEMENT

See QAPP's submitted by Aqualab Inc. and Daily Analytical Laboratories for certification as IEPA Contract Laboratories.

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APPENDIX A

AQUALAB INC.

CONTRACT LABORATORY SERVICES

QUALITY ASSURANCE PROJECT PLAN

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Prepared By:

Aqualab Inc.
850 West Bartlett Road
Bartlett, Illinois 60103
(312) 289-3100

N 0253

Scope of Work for State - FY '87

Contract Laboratory Service

Quality Assurance Project Plan

The IEPA requires the contract laboratory to prepare a Quality Assurance Project Plan (QAPP) which specifies the level of quality which will be maintained in analyses performed under the contract. This Quality Assurance Project Plan must be approved by the Quality Assurance Section of the Division of Laboratories before analysis of samples may begin.

The approved QAPP will become a legally binding part of this contract.

The Quality Assurance Project Plan must detail the following information:

1. Chart of organization and individual responsibilities.
2. QA objectives in terms of precision, accuracy, completeness, representativeness and comparability.
3. Sampling procedures including containers with caps, holding times, preservatives, bottle preparation, et cetera
4. Chain of custody.
5. Calibration procedures and frequency.
6. Analytical procedures.
7. Data reduction, validation and reporting.
8. Internal quality control checks.
9. Performance and system audits.
10. Preventive maintenance.
11. Specific routine procedures used to assess data precision, accuracy and completeness.
12. Corrective action.
13. Quality assurance reports to management.

The QAPP must include specific methods for each type of sample, details of how the quality of each method will be monitored and what actions will be taken when the level of quality falls below the agreed limits. The QAPP must also include a section on how the level of quality will be documented to the IEPA.

General Work Requirements

1. The contractor must use instrumentation and techniques approved by USEPA to identify and measure the concentration of all chemicals on the modified Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) list of hazardous substances, Section 101(14) (see Attachments C and D; target compounds lists).
2. The Agency will submit all samples to the contractor in containers provided by the contractor or in containers approved by the IEPA Contract Laboratory Officer. The contractor shall use only USEPA specified sample preservation, sample bottles and holding times. The contractor shall provide the information about bottle preparation, types of lids, preservatives, holding times, field blanks, field duplicates and chain-of-custody procedures required in the Quality Assurance Project Plan.
3. The samples to be analyzed by the contractor are from known or suspected hazardous waste sites and emergency spills, and these samples may contain hazardous organic and/or inorganic materials at high concentration levels. The contractor must be aware of the potential hazards associated with the handling and analyses of these samples. It shall be the contractor's responsibility to take all necessary measures to ensure his employees' safety.
4. The contractor must use only USEPA approved methods or their equivalent for each sample media. All methodology must meet the approval of the IEPA Quality Assurance Section. When the approved method gives more than one alternative, the contractor shall specify which alternative they plan to use. If the contractor uses any variations to the approved methods, they must be detailed to the Agency contract manager in writing at the time of bidding. The Agency will then determine the acceptability of these proposed modifications.
5. The cost of all QA/QC work required in the approved QAPP shall be included in the cost of sample analysis except as follows:

Field blanks and field duplicates will be paid for as samples.

Sample duplicates and sample spikes will be paid for as samples only at the frequency specified in Specific Work Requirements - Inorganic Section item 2 Quality Control Frequency -- Metals and Other Inorganic Parameters. Matrix Spike and Matrix Spike Duplicate samples will be paid for only at the frequency specified in QA/QC Protocols - Organics, item 6.

6. If the QC for a sample or set of samples is outside the acceptance limits established in this contract, the contractor shall reanalyze the sample or set of samples. If the reanalysis is also outside the acceptance limits and the analysis of a QC check sample shows that the method is in control, the Agency shall bear the cost of the reanalysis. If the QC on the reanalysis is within acceptance limits or the analysis of the QC check sample shows that the method is out of control, the contractor shall take appropriate corrective action and reanalyze the sample when the method is brought into control. When the method is judged to be out of control, the contractor shall bear the cost of all necessary resamples, or reanalyses.

7. In order to authorize payment for analyses at higher than the maximum 30 calendar day completion time prices, the Agency must receive a summary of the results which has been dated and post-marked, on or before, the due date for the accelerated completion time. The data should be sent by over-night mail service. Actual postage costs may be included on your bill to the Agency.
8. Samples and sample processing products (e.g., digestate, distillate, extract) shall be held by the contractor at 40C for 30 days after the date of the analysis. After the 30 day holding period, at 40C, the samples shall be held for an additional 90 days (refrigeration not required for 90 day holding period). If the Contract Laboratory Officer has not requested that the samples be returned to the Agency before the end of the 90 day holding period, it is the responsibility of the contractor to properly dispose of the samples.

Specific Work Requirements - Inorganic Section

1. Contract Quality Control Requirements

The minimum QC requirements of the inorganic program consist of both an initial and ongoing demonstration the contractors capability to generate acceptable precision and accuracy, using approved methods in the analysis of samples from various matrices. This scope-of-work and the Agency approved QAPP defines extensive QA procedures that must be performed and documented and criteria that must be met. These include, but are not limited to, the following:

- . Calibration curve and initial calibration verification
- . Continuing calibration verification
- . ICAP interference check sample analysis
- . Procedural blank analysis
- . Sample spike analysis
- . Sample duplicate analysis
- . Laboratory control sample

2. Quality Control Frequency -- Metals and other Inorganic Parameters

Metals

Calibration Curve: For atomic absorption systems, calibration curves must be composed of a minimum of a blank and three standards. The calibration curve is to be prepared fresh each time an analysis is to be performed. The Method of Standard Addition (MSA) shall be used for the analysis of all EP extracts and all samples that suffer from matrix interferences. For ICP systems, calibrate the instrument according to instrument manufacturer's recommended procedures.

Initial Calibration Verification: Initial calibration verification for metals is performed at the beginning of the analysis of samples by analyzing an independent standard. The independent standard must be prepared from a different stock standard source than that used in the preparation of standards for the calibration curve. The independent standard concentration must fall within the calibration range.

Continuing Calibration Verification: These checks determine that the analytical system is meeting contract-required criteria. A mid-range standard and a blank are required every 10 samples. The standard must be prepared from a different stock standard source than that used in the preparation of standards for the calibration curve.

ICAP interference check sample: ICAP interference check sample analyses must be performed at the beginning and end of each sample analysis run (or a minimum of twice per eight-hour shift) to verify interelemental and background correction factors.

Procedural blank: Procedural blank analyses must be performed for each batch of samples, or for each set of 20 samples, to ascertain whether sample concentrations reflect contamination. The first 20 samples of a batch are to be assigned to procedural blank one, and the second 20 samples to procedural blank two, etc.

Sample spikes: Spiked sample analyses must be performed for each matrix within a batch of samples or for each set of 20 samples of a similar matrix within a batch. This provides information on analytical accuracy, and the effect of the sample matrix on the digestion and measurement methodology. (See Table 1: "Spiking Levels For Spiked Sample Analysis")

Table 1
SPIKING LEVELS¹ FOR SPIKED SAMPLE ANALYSIS

Element	For ICP/AA (ug/L)		For Furnace AA (ug/L)		Other (ug/L)
	Water	Sediment ²	Water	Sediment ²	
Aluminum	2,000	*			
Antimony	500	500	100	100	
Arsenic			20	40	
Barium	2,000	2,000			
Beryllium	50	50			
Cadmium	50	50	5	5	
Chromium	200	200			
Cobalt	500	500			
Copper	250	250			
Iron	1,000	*			
Lead	500	500	20	50	
Manganese	200	500			
Mercury					1
Nickel	400	500			
Selenium			10	10	
Silver	50	50			
Thallium			50	50	
Vanadium	500	500			
Zinc	200	500			

¹ Amount to add prior to digestion/distillation -- choose amount appropriate to method of analysis. Elements without spike levels and not designated with an asterisk, should be spiked at appropriate levels.

² The levels shown indicate concentrations in the digestate of the spiked sample. For example 1 ml x 50 mg/L Pb spiking solution = 50 ug Pb, then 50 ug Pb ÷ .100 L final digestate volume = 500 ug/L concentration in the digestate of spiked sample.

* No spike required.

Water = sample matrices of the groundwater, surface water, and wastewater type.

Sediment = sample matrices of the solid, soil, and sludge type.

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Sample duplicates: Duplicate samples must be performed for each matrix within a batch of samples or for each set of 10 samples of a similar matrix within a batch. This provides information concerning sample homogeneity, analytical precision, and enables IEPA personnel to evaluate the long-term precision of the method.

Laboratory control sample: The "laboratory control sample" is a standard carried through sample preparation and analytical methods to document the performance of the entire sample process. The laboratory control sample is required for each batch of samples taken through the sample process or for each set of 20 samples. For metals, the control sample is a blank spiked with the appropriate concentration of metals to be determined so that at the time of analysis the final concentration should fall on the calibration curve. Percent recovery is then determined.

Other Inorganic Parameters

For all other inorganic parameters the frequency of Q.C. stated below is required.

Procedural Blank: Every 20 samples if distillation or digestion is required by the analytical method

Sample Duplicate: Every 10 samples

Sample Spike: Every 20 samples

Laboratory Control Sample: Every 15 samples. If the method calls for sample preparation (i.e., Distillation, Digestion, etcetera), the lab control sample shall be subject to the entire procedure. The laboratory control sample is being used to validate the calibration curve and determine the level of analytical accuracy. This sample shall be the last sample analyzed each analytical run.

If for an analytical run a previously ran calibration curve is to be verified, it shall be done with the use of a reagent blank and two standards, (i.e., one standard at mid-range and one at or near the maximum allowable concentration). Checks must be within $\pm 10\%$ of the original curve. The original curve must be comprised of a reagent blank and five standards.

These QA/QC practices must be detailed in the QAPP. For additional guidelines regarding these general laboratory QA/QC procedures, please see Section 4 and 5 of the Handbook for Analytical Quality Control in Water and Wastewater Laboratories EPA-600/4-79-019, USEPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1979.

3. Quality Control Criteria -- Metals and other Inorganic Parameters

Calibration Curve: Calibration curves must show a correlation coefficient between 0.995 and 1.000.

When comparing the slope of the Method of Standard Addition (MSA) curve, for metals, to that of the aqueous standard curve, the MSA slope should not differ more than 20%. Except for EP extracts, laboratories have the option of analysis using an aqueous standard curve or MSA.

When analyzing samples by Graphite Furnace Atomic Absorption, and an aqueous calibration curve will be used to calculate concentration, the average of two injections must be reported. Both absorbance (or concentration) readings must fall within the range of the calibration curve. For concentrations greater than CRDL, the duplicate injections must agree within +20 percent relative standard deviation (RSD), or the sample must be rerun at least once.

All furnace analyses for each sample will require at least a single analytical spike to determine if the MSA will be required for quantitation. The spike is required to be at a concentration (in the sample) twice the CRDL. The percent recovery of the spike sample will determine how the sample is to be quantitated according to the following protocols:

- A. If the spike recovery is less than 40%, the sample must be diluted and rerun with another spike. Dilute the sample by a factor of 5 to 10 and rerun. This step need only be performed once. If, after the dilution, the spike recovery is still less than 40%, report the results from this analysis and flag the data with an "E" to indicate interference problems.
- B. If the spike recovery is greater than 40% and the sample absorbance or concentration is less than 50% of the spike, report the sample as less than the CRDL or less than the CRDL times the dilution factor, if the sample was diluted.
- C. If the sample absorbance or concentration is greater than 50% of the spike, and the spike recovery is between 85% and 115%, the sample should be quantitated from the aqueous calibration curve.
- D. If the sample absorbance or concentration is greater than 50% of the spike, and the spike recovery is between 40% and 85% or greater than 115%, the sample must be quantitated by MSA.

When analyzing sample matrices of the solid, soil, or sludge type by Direct Aspiration Atomic Absorption, and the digested sample requires a dilution by a factor of ten or less to fall within the linear range of the calibration curve, then that sample must be subjected to the following procedure to determine whether quantification by Method of Standard Additions (MSA) is required.

- A. Withdraw from the undiluted sample two equal aliquots.
- B. To one of the aliquots add a known amount of analyte and dilute both aliquots to the same predetermined volume. The dilution volume should be based on the analysis of the undiluted sample, keeping in mind the optimum concentration range for analysis. The dilution should not be less than 1:1, or greater than 1:9. Samples undiluted initially that fell on or below the calibration curve should be diluted 1:1 for this procedure.

The concentration of the spike in the sample must be at a level that would be easily detected, and quantifiable if that same analyte were in an aqueous standard.

C. Analyze the diluted aliquots.

The result of the spiked aliquot must be within the range of the calibration curve, if not choose a more appropriate spike concentration, and/or reexamine the dilution factor of the sample.

D. Calculate percent recovery of the spike.

If the spike recovery is between 85% and 115%, the sample should be quantitated directly from the aqueous standard curve. If the spike recovery is less than 85% or greater than 115%, the sample must be quantitated by MSA.

The results of this procedure must be documented on the strip chart. Documentation should include, dilution factors, sample result, spiked sample result, amount of spike added.

The following procedures will be incorporated into MSA analyses:

- A. Data from MSA calculations must be within the linear range as determined by the calibration curve generated at the beginning of the analytical run.
- B. The sample and three spikes must be analyzed consecutively for MSA quantitation (the "initial" spike run data is specifically excluded from use in the MSA quantitation). Only single injections are required for MSA quantitation.
- C. Spikes should be prepared such that:
 - Spike 1 is approximately 50% of the sample absorbance.
 - Spike 2 is approximately 100% of the sample absorbance.
 - Spike 3 is approximately 150% of the sample absorbance.
- D. The data for MSA quantitation should be clearly identified in the raw data documentation along with the slope, intercept and correlation coefficient (r) for the least square fit of the data and the results reported to the Agency. Reported values obtained by the MSA are flagged on the data sheet with an "s".
- E. If the correlation coefficient (r) for a particular analysis is less than 0.995, the MSA analysis must be repeated once. If the correlation coefficient is still less than 0.995, the results must be flagged with "+".

It is required that each contract laboratory have equipment maintenance procedures, schedules and documentation for the A.A. spectrophotometer(s), and ICP instrumentation. Optimization procedures and the verification of the optimization procedures shall be documented.

Initial Calibration Verification and Continuing Calibration Verification:
Independent Standard; Mercury 80-120% recovery, all other compounds 90-110% recovery. Blank; Document absorbance/concentration

or initial calibration verification when the measurements exceed the control limits, the analysis must be terminated, the problem corrected, the instrument recalibrated, and the calibration reverified. If the deviation of the continuing calibration verification is greater than the control limits, the instrument must be recalibrated and the preceding 10 samples reanalyzed for the analytes affected.

ICAP Interference Check sample: +2 standard deviations from mean value. If results for the check sample does not fall within the control limit, terminate the analysis, correct the problem, recalibrate, reverify the calibration, and reanalyze the samples.

Procedural Blank: Document absorbance/concentration. If the concentration of the blank is above the instrument detection limit (IDL): For any group of samples associated with a particular blank, the concentration of the sample with the least concentrated analyte must be 10X the blank concentration, or all samples associated with the blank and less than 10 times the blank concentration must be redigested and reanalyzed. The sample value is not to be corrected for the blank value.

Sample Spikes: 75-125% recovery. If data is not within the limits of 75-125% recovery the contractor must take action as described in part six of the General Work Requirements. An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of four or more. In such a case, the spike recovery should not be considered and the data shall be reported unflagged even if the percent recovery does not meet the 75-125% recovery criteria.

When sample concentration is less than CRDL, use 0 = sample result for purposes of calculating percent recovery.

The spiked sample results must be reported on Form IV.

Sample Duplicate: The estimate of precision of duplicate measurements is expressed as the relative percent difference (RPD). If the data is not within the control limit fo +20% the contractor must take action as described in part six of the Genral Work Requirements.

$$RPD = [(S-D)/((S+D)/2)] \times 100 = \leq 20\%$$

Laboratory Control Sample: 80-120% recovery. If the % recovery for the LCS falls outside the control limits the analyses must be terminated, the problems corrected and the previous samples associated with that LCS re-analyzed.

4. Data Package Reporting Requirements

The inorganic data package supports independent sample data review by the IEPA. Through review of data package components, the IEPA can determine the quality of the analytical data.

Each inorganic data package includes the following components:

- A. Cover sheet, listing the samples included in the report and narrative comments describing problems encountered in analysis.
- B. Tabulated results of inorganic compounds identified and quantified, reported in mg/l or mg/kg.
- C. Analytical results for QC sample spikes, sample duplicates, initial and continuing calibration verification of standards and blanks, standards, procedural blanks, laboratory control samples, and ICAP interference check samples.
- D. Tabulation of instrument detection limits determined in pure water.
- E. Raw data system printouts (or legible photocopies), identifying date of analysis, analyst, parameters determined, calibration curve, calibration verifications, procedural blanks, samples and any atypical dilutions, sample duplicates, sample spikes, and laboratory control samples.

5. Detection Limits

The Contractor must perform and report to the Contract Laboratories Officer quarterly verification of instrument detection limits (IDLs) for each of the metals in pure water. IDLs may need to be verified more frequently if there is a major change in the analytical system. IDLs must be reported by type and model for each instrument used on this contract. IDLs shall only be reported for analytical methods specified in the approved QAPP.

The Agency will provide the Contractor a form with the appropriate reporting format for the IDLs. The form also contains minimum Contract Required Instrument Detection Levels (CRDL), found in Attachment D, that must be met by all laboratories for each of the metals in pure water.

The instrumental detection limits (in ug/L) shall be determined by multiplying by 3, the standard deviation obtained for the analysis of a standard solution (each analyte in reagent water) at a concentration 3-5 times the IDL on three (3) nonconsecutive days with 7 consecutive measurements per day. Data are reported down to the "pure water" IDL.

Specific Work Requirements - Organic Section

1. The laboratory must analyze for all of the pesticide and PCB target compounds in attachment C by gas chromatography with an electron capture detector. The laboratory must tentatively identify the pesticide/PCB parameters by retention time on a primary GC column and confirm the identification on a confirmatory column of a dissimilar polarity. Any compounds confirmed by two columns must also be confirmed by GC/MS if the concentration is sufficient for detection by GC/MS as determined by the laboratory generated detection limits.

The standard deviation of the retention time must be calculated for each pesticide and PCB compound from a minimum of three injections within a 24 hour period. For multi-response pesticides and PCB's, the calculation need only be done for one of the major peaks. The retention time for identification of a component will be the retention time of that component in the daily calibration standard plus or minus three times the standard deviation calculated for that component. If the standard deviation calculation for a compound results in a standard deviation of zero, then establish a reasonable retention time window.

2. When GC/MS work is performed, all of the compounds listed in the attached target compound lists (Attachment C) must be identified by an analyst competent in the interpretation of mass spectra by comparison of the sample mass spectrum to the mass spectrum of a standard of the suspected compound.

Two criteria must be satisfied to verify the identifications:

- A. Elution of the sample component must be at the same GC relative retention time (RRT) as the standard of that component. For establishing correspondence of the RRT, the sample component RRT must compare within ± 0.06 RRT units of the RRT of the standard component. For reference, the standard must be run on the same shift as the sample. If coelution of interfering components prohibits accurate assignment of the sample component RRT from the total ion chromatogram, the RRT should be assigned by using extracted ion current profiles for ions unique to the component of interest.
- B. Correspondence of the sample component mass spectrum and the standard component mass spectrum must be established. For comparison of standard and sample component mass spectra, mass spectra obtained on the contractor's GC/MS are required. Once obtained, these standard spectra may be used only if the contractor's GC/MS meets the daily tuning requirements for the analysis being performed. The standard spectra may be obtained from the run used to obtain reference RRTs. All ions present in the standard mass spectrum at a relative intensity greater than 10 percent must be present in the sample spectrum and their relative intensities must agree within ± 20 percent. Ions present in the sample spectrum, at greater than 10 percent relative abundance, which are not present in the standard spectrum must be considered and accounted for by the analyst (this process should favor false negatives).

3. The contractor must also perform forward search routines of the most recent available EPA/NIH mass spectral library and report tentative identifications and estimated concentrations of the ten most significant not listed GC peaks in samples run for volatile analyses and the twenty most significant not listed GC peaks in semi-volatile analyses. Substances with response of less than 10% of the nearest internal standard are not required to be searched in this manner.
 - A. Relative intensities of major ions in the reference spectrum (ions greater than 10% of the most abundant ion) should be present in the sample spectrum.
 - B. The relative intensities of the major ions should agree within +20%. (Example: For an ion with an abundance of 50 percent of the standard spectra, the corresponding sample ion abundance must be between 30 and 70 percent.)
 - C. Molecular ions present in reference spectrum should be present in sample spectrum.
 - D. Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of co-eluting compounds.
 - E. Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or co-eluting compounds. Data system library reduction programs can sometimes create these discrepancies.

If in the opinion of the mass spectral specialist, no valid tentative identification can be made, the compound should be reported as unknown. The mass spectral specialist should give additional classification of the unknown compound, if possible (i.e., unknown aromatic, unknown hydrocarbon, unknown acid type, unknown chlorinated compound). If probable molecular weights can be distinguished, include them.

4. The approved QAPP shall include a reporting package format which includes results of initial calibration analyses, continuing calibration standards and verification of initial calibration curves, GC/MS tuning verification runs with spectra, results of reagent blanks, recovery of matrix spike samples, matrix spike duplicates, surrogate spikes, and pesticide standards data.
5. All sample results must be reported to the IEPA in the same chronological order that they were analyzed, along with the standards, spikes, blanks, duplicates and/or surrogates. The GC chromatograms and/or GC/MS spectra and computer printouts (or legible photocopies) must be submitted to support all the results. The samples must be analyzed within the appropriate holding time specified in the standard operating procedures.

QA/QC Protocols - Organics

For pesticide and PCB analysis by ECD. Volatile organics and acid-base/neutrals by GC/MS.

1. Initial demonstration of acceptable precision and accuracy -- Analyze four replicate spiked samples according to the applicable method. The average concentration and standard deviation for each component must meet QC Acceptance Criteria in the applicable wastewater method (only one PCB mixture need be analyzed). Alternatively, historical data generated with USEPA CLP protocols may be submitted. Data from spiked blanks, USEPA QC Samples, or USEPA Performance Evaluation Samples is acceptable.

When using capillary columns, the contractor must demonstrate less than 6% relative standard deviation (RSD) between replicate injections and less than 15% RSD between replicate purges for each instrument. RSD of surrogate response, calculated by internal standard technique, must be measured in blank samples or standards.

2. Initial calibration curves must be generated for each compound on the attached target lists for the method being calibrated. The standards used to generate the curves must start at or near the Contract Required Detection Limit (CRDL) and cover the entire working range of the instrument. Any sample concentrate must be diluted or concentrated so that all components present above the CRDL fall within the range of the initial calibration curve. When dilution of a sample or sample extract is necessary, the analyst must quantify the lower level components from the initial undiluted analysis.

For GC/MS analyses, calibration must be at five points by the internal standard technique. Calculate Response Factors (RF) according to:

$$RF = A_x/A_{is} \times C_{is}/C_x$$

where

A_x = Area of the characteristic ion for the compound to be measured.

A_{is} = Area of the characteristic ion for the specific internal standard used to calculate the compound to be measured.

C_{is} = Concentration of the internal standard (ng/uL).

C_x = Concentration of the compound to be measured (ng/uL).

RF and average RF must be calculated for each component. The minimum acceptable average RF for the volatile compounds; chloromethane, 1,1-dichloroethane, 1,1,2,2-tetrachloroethane and chlorobenzene is 0.300. The minimum acceptable average RF for bromoform is 0.250. The minimum acceptable average RF for the semivolatile compounds; N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-dinitrophenol and 4-nitrophenol is 0.050.

For the following Calibration Check Compounds (CCC), percent relative standard deviation (%RSD) must be calculated:

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Base/Neutral CCC	Acid/CCC	Volatile CCC
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Acenaphthene
1,4-Dichlorobenzene
Hexachlorobutadiene
N-Nitrosodiphenylamine
Di-n-Octylphthalate
Fluoranthene
Benzo(a)pyrene

4-Chloro-3-Methylphenol
2,4-Dichlorophenol
2-Nitrophenol
Phenol
Pentachlorophenol
2,4,6-Trichlorophenol

1,1-Dichloroethene
Chloroform
1,2-Dichloropropane
Toluene
Ethylbenzene
Vinyl Chloride

=====

Calculate %RSD by:

$$\%RSD = (SD/ave.RF) \times 100$$

where

SD = Standard Deviation of initial 5 response factors (per compound)

For the initial calibration to be valid, the %RSD for these compounds must be less than 30 percent.

For pesticide/PCB analysis by GC/ECD, calibration must be at three points by the external standards technique.

3. A QC check standard which must be obtained from a different source than the initial calibration standard must be analyzed for each compound for which an initial calibration curve is generated. Each compound must be compared to its initial calibration curve according to the procedure described in the following Section 4 (continuing calibration) and meet the acceptance criteria given in Section 4 (continuing calibration).
4. Continuing calibration verification must be performed daily or after 12 hours, whichever comes first, before samples are analyzed. The RF of the components of a continuing calibration standard must be compared to the average RF for that component obtained from the initial calibration curve. Calculate Percent Difference (%D) of the CCC's by:

$$\%D = ((ave.RF_i - RF_c)/ave.RF_i) \times 100$$

where

ave.RF_i = Average RF for the compound calculated at initial calibration.

RF_c = RF for the compound calculated from the continuing calibration standard.

A %D of + 20% should be considered a warning limit. Analysis of samples may not proceed if the %D for any CCC exceeds +25%. If the %D for any CCC exceeds 25% the laboratory must take corrective action. If the percent difference for all the CCC's is within the +25% limit, then the initial calibration is considered valid and analysis of samples may proceed. The contractor may propose to substitute up to three of the CCC compounds in any category with calibration check compounds important to the investigation of a site. The contractor may add as many calibration check compounds as are necessary.

5. For each 12-hour period, before any samples or standards are run on the GC/MS, the GC/MS tuning must be verified by comparing the spectrum of BFB (p-bromo-fluorobenzene) for volatile analysis or DFTPP (decafluoro-triphenylphosphine) for base/neutral or acid extractable (BNA) analysis to the ion abundance criteria in table 2 (BFB) or table 3 (DFTPP). For each tuning verification compound, the mass labeled as the base peak in the appropriate table must be 100% relative abundance. Up to three of the other masses may be out of the limits in the tables. If more than three of the criteria cannot be met, analysis must not proceed.

Table 2
BFB Tuning Verification Limits

Mass	Ion Abundance Criteria
50	15.0 - 40.0 percent of the base peak
75	30.0 - 60.0 percent of the base peak
95	base peak, 100 percent relative abundance
96	5.0 - 9.0 percent of the base peak
173	less than 1.00 percent of the base peak
174	greater than 50.0 percent of the base peak
175	5.0 - 9.0 percent of mass 174
176	greater than 95.0 percent but less than 101.0 percent of mass 174
177	5.0 - 9.0 percent of mass 176

Table 3
DFTPP Tuning Verification Limits

Mass	Ion Abundance Criteria
51	30.0 - 60.0 percent of mass 198
68	less than 2.0 percent of mass 69
70	less than 2.0 percent of mass 69
127	40.0 - 60.0 percent of mass 198
197	less than 1.0 percent of mass 198
198	base peak, 100 percent relative abundance
199	5.0 - 9.0 percent of mass 198
275	10.0 - 30.0 percent of mass 198
365	greater than 1.00 percent of mass 198
441	present but less than mass 443
442	greater than 40.0 percent of mass 198
443	17.0 - 23.0 percent of mass 442

6. In order to monitor method precision and accuracy, duplicate matrix spikes will be analyzed every 20 samples, or once per batch of samples of a similar matrix, for each method. Matrix spike compounds for each type of analysis and limits for percent recovery and relative percent difference are given in Table 4.

Table 4
MATRIX SPIKE DUPLICATE QC LIMITS

Fraction	Matrix Spike Compound	Recovery Limits		RPD Limits	
		Water	Soil/Sed	Water	Soil/Sed
VOA	1,1-Dichloroethane	61-145	59-172	14	22
VOA	Trichloroethene	71-120	62-137	14	24
VOA	Chlorobenzene	75-130	60-133	13	21
VOA	Toluene	76-125	59-139	13	21
VOA	Benzene	76-127	66-142	11	21
BN	1,2,4-Trichlorobenzene	39- 98	38-107	28	23
BN	Acenaphthalene	46-118	31-137	31	19
BN	2,4-Dinitrotoluene	24- 96	28- 89	38	47
BN	Di-n-butylphthalate	11-117	29-135	40	47
BN	Pyrene	26-127	35-142	31	36
BN	N-nitroso-di-n-propylamine	41-116	41-126	38	38
BN	1,4-Dichlorobenzene	36- 97	28-104	28	27
Acid	Pentachlorophenol	9-103	17-109	50	47
Acid	Phenol	12- 89	26- 90	42	35
Acid	2-Chlorophenol	27-123	25-102	40	50
Acid	4-Chloro-3-methylphenol	23- 97	26-103	42	33
Acid	4-Nitrophenol	10- 80	11-114	50	50
Pest.	Lindane	56-123	46-127	15	50
Pest.	Heptachlor	40-131	35-130	20	31
Pest.	Aldrin	40-120	34-132	22	43
Pest.	Dieldrin	52-126	31-134	18	38
Pest.	Endrin	56-121	42-139	21	45
Pest.	4,4-DDT	38-127	23-134	27	50
PCB	Arochlor 1254	*	*	30	50

*Recovery limits for PCB's will be developed as performance data becomes available.

7. To monitor method quality control and sample integrity, reagent water blanks and field blanks will be analyzed periodically and surrogate spike compounds will be added to every sample. A reagent water blank will be analyzed every day that semi-volatiles or pesticides/PCB's are extracted or with every 20 samples, whichever is more often. A reagent water blank will be analyzed each day before volatile analysis is performed. A pair of field blanks will accompany each batch of 10 pairs of sample bottles into the field, and will be analyzed with the associated samples.

Limits for contaminants in blanks are as follows:

Pesticides/PCB's and BNA's - any compound, except common phthalate esters, on the attached target compounds list (Attachment C) present in a blank must be below the CRDL. Common phthalate esters must be below five times the CRDL. Any tentatively identified compound present in the blank must be less than 50 percent of the amount of that compound in any of the associated samples.

VOA - all contaminants, except the common laboratory solvents: methylene chloride, acetone and toluene, in the daily reagent water blank must be below the CRDL before analysis of samples may proceed. Common laboratory solvents must be below five times the CRDL. Target compounds, except common laboratory solvents, in the field blank must be below the CRDL. Common laboratory solvents in the field blank must be below five times the CRDL. Tentatively identified compounds in a field blank must be less than 50 percent of that component in any of the associated samples.

If the limits for contaminants are exceeded in a blank and any of the associated samples contain that compound at reportable levels, corrective action must be taken and documented. The samples associated with the suspect blank must be reanalyzed if sufficient sample volume is available. If sufficient sample volume is not available, the problem and corrective actions taken must be discussed in the QA summary narrative.

Surrogate spike compounds will be added to each sample analyzed for acid and base/neutral extractables, pesticides and PCB's, or volatile organics. Surrogate spike compounds and recovery limits are given below:

Fraction	Surrogate Compound	Low/Medium Water	Low/Medium Soil/Sediment
VOA	Toluene-d ₈	88-100	81-117
VOA	4-Bromofluorobenzene	86-115	74-121
VOA	1,2-Dichloroethane-d ₄	76-114	70-121
BNA	Nitrobenzene-d ₅	35-114	23-120
BNA	2-Fluorobiphenyl	43-116	30-115
BNA	p-Terphenyl-d ₁₄	33-114	18-137
BNA	Phenol-d ₅	10-94	24-113
BNA	2-Fluorophenol	21-100	25-121
BNA	2,4,6-Tribromophenol	10-123	19-122
Pest.	Dibutylchloroendate	24-154*	20-150*

At present, Dibutylchloroendate limits are advisory only. They are not used to determine if a sample should be reanalyzed.

If a surrogate recovery falls outside of these limits, the sample must be reanalyzed. If the surrogate recovery of the reanalyzed sample is still outside of the limits, report both samples and describe the problem in the QA summary narrative. The IEPA will pay for both analyses. If the surrogate recovery of the reanalyzed sample is within the limits, report only that sample. The IEPA will pay only for the analysis with surrogate recoveries within limits.

Attachment C
Volatile Target Compounds

Compound	Water CRDL	Soil/Solid CRDL
1. chloromethane	10 ug/l	10 ug/kg
2. bromomethane	10	10
3. vinyl chloride	10	10
4. chloroethane	10	10
5. methylene chloride	5	5
6. acetone	10	10
7. carbon disulfide	5	5
8. 1,1-dichloroethene	5	5
9. 1,1-dichloroethane	5	5
10. t-1,2-dichloroethene	5	5
11. 1,2-dichloropropane	5	5
12. chloroform	5	5
13. 1,2-dichloroethane	5	5
14. 2-butanone	10	10
15. 1,1,1-trichloroethane	5	5
16. carbon tetrachloride	5	5
17. vinyl acetate	10	10
18. dichlorobromomethane	5	5
19. c-1,3-dichloropropene	5	5
20. trichloroethene	5	5
21. benzene	5	5
22. chlorodibromomethane	5	5
23. 1,1,2-trichloroethane	5	5
24. t-1,3-dichloropropene	5	5
25. 2-chloroethyl vinyl ether	10	10
26. bromoform	5	5
27. 2-hexanone	10	10
28. 4-methyl-2-pentanone	10	10
29. 1,1,2,2-tetrachloroethane	5	5
30. tetrachloroethene	5	5
31. toluene	5	5
32. chlorobenzene	5	5
33. ethylbenzene	5	5
34. styrene	5	5
35. total xylenes	15	15

Base/Neutral Target Compounds

Compound	Water CRDL	Soil/Solid CRDL
1. Hexachloroethane	10 ug/l	330 ug/kg
2. Bis (2-chloroethyl) ether	10	330
3. Benzyl Alcohol	10	330
4. Bis (2-chloroisopropyl) ether	10	330
5. N-nitrosodi-n-propylamine	10	330
6. Nitrobenzene	10	330
7. Hexachlorobutadiene	10	330
8. 2-Methylnaphthalene	10	330
9. 1,2,4-trichlorobenzene	10	330
10. Isophorone	10	330
11. Naphthalene	10	330
12. 4-Chloroaniline	10	330
13. Bis (2-chloroethoxy) methane	10	330
14. Hexachlorocyclopentadiene	10	330
15. 2-chloronaphthalene	10	330
16. 2-Nitroaniline	50	1600
17. Acenaphthylene	10	330
18. 3-Nitroaniline	50	1600
19. Acenaphthene	10	330
20. Dibenzofuran	10	330
21. Dimethylphthalate	10	330
22. 2,6-Dinitrotoluene	10	330
23. Fluorene	10	330
24. 4-Nitroaniline	50	1600
25. 4-Chlorophenyl-phenyl ether	10	330
26. 2,4-Dinitrotoluene	10	330
27. Diethylphthalate	10	330
28. N-Nitrosodiphenylamine	10	330
29. Hexachlorobenzene	10	330
30. Phenanthrene	10	330
31. 4-Bromophenyl-phenyl ether	10	330
32. Anthracene	10	330
33. Dibutylphthalate	10	330
34. Fluoranthene	10	330
35. Pyrene	10	330
36. Butyl benzyl phthalate	10	330
37. Bis (2-ethylhexyl) phthalate	10	330
38. Chrysene	10	330
39. Benzo (a) anthracene	10	330
40. 3,3'-Dichlorobenzidene	20	660
41. Di-n-octyl phthalate	10	330
42. Benzo (b) fluoranthene	10	330
43. Benzo (k) fluoranthene	10	330
44. Benzo (a) pyrene	10	330
45. Indeno (1,2,3-cd) pyrene	10	330
46. Dibenzo (a,h) anthracene	10	330
47. Benzo (g,h,i) perylene	10	330
48. 1,2-Dichlorobenzene	10	330
49. 1,3-Dichlorobenzene	10	330
50. 1,4-Dichlorobenzene	10	330

Acid Target Compounds

Compound	Water	Soil/Solid
	CRDL	CRDL
1. Benzoic Acid	50 ug/l	1600 ug/kg
2. Phenol	10	330
3. 2-chlorophenol	10	330
4. 2-nitrophenol	50	1600
5. 2-methylphenol	10	330
6. 2,4-dimethylphenol	10	330
7. 4-methylphenol	10	330
8. 2,4-dichlorophenol	10	330
9. 2,4,6-trichlorophenol	10	330
10. 2,4,5-trichlorophenol	50	1600
11. 4-chloro-3-methylphenol	10	330
12. 2,4-dinitrophenol	50	1600
13. 2-methyl-4,6-dinitrophenol	50	1600
14. Pentachlorophenol	50	1600
15. 4-nitrophenol	50	1600

Pesticide Target Compounds

Compound	Water CRDL	Soil/Solid CRDL
1. ✓ alpha-BHC	.05 ug/l	8.0 ug/kg
2. ✓ beta-BHC	.05	8.0
3. ✓ delta-BHC	.05	8.0
4. ✓ Lindane (gamma-BHC)	.05	8.0
5. ✓ Heptachlor	.05	8.0
6. ✓ Aldrin	.05	8.0
7. ✓ Heptachlor epoxide	.05	8.0
8. ✓ Endosulfan I	.05	8.0
9. ✓ 4,4'-DDE	.10	16.0
10. ✓ Dieldrin	.10	16.0
11. ✓ Endrin	.10	16.0
12. ✓ 4,4'-DDD	.10	16.0
13. ✓ Endosulfan II	.10	16.0
14. ✓ 4,4'-DDT	.10	16.0
15. ✓ Endrin aldehyde	.10	16.0
16. ✓ Endosulfan sulfate	.10	16.0
17. ✓ Methoxychlor	.50	80.0
18. ✓ Chlordane	.50	80.0
19. ✓ Toxaphene	.50	80.0
20. -Arochlor-1016	1.0	160.0
21. -Arochlor-1221	.50	80.0
22. -Arochlor-1232	.50	80.0
23. -Arochlor-1242	.50	80.0
24. -Arochlor-1248	.50	80.0
25. -Arochlor-1254	1.0	160.0
26. -Arochlor-1260	1.0	160.0

Attachment D

Inorganic Target Compounds

Metals Analyses (CRDL)-ug/l*

Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	5
Manganese	15
Mercury	0.2
Nickel	40
Selenium	5
Silver	10
Thallium	10
Vanadium	50
Zinc	20

Other Inorganics

Cyanide
Sulfide
Phenols
Nitrogen-Ammonia
Nitrogen, Total Kjeldahl
Nitrogen-Nitrate
Boron
pH

*Any analytical method specified in the Quality Assurance Project Plan (QAPP) may be utilized as long as the documented instrument or method detection limits meet the Contract Required Detection Level requirements. Higher detection levels may only be used in the following circumstance:

If the sample concentration exceeds two times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the CRDL. This is illustrated in the example below:

For lead:

Method in use -- ICP

Instrument Detection Limit (IDL) = 40

Sample Concentration = 85

Contract Required Detection Level (CRDL) = 5

The value of 85 may be reported even though instrument detection limit is greater than required detection level. The instrument or method detection limit must be documented as described in Form IIIX.

These CRDL are the instrument detection limits obtained in pure water that must be met using ICP/Flame AA or Furnace AA. The detection limits for samples may be considerably higher depending on the sample matrix.

RT:ba/sp2551e/1-27

Illinois Environmental Protection Agency
Contract Laboratory Service
Inorganic Analyses Data Package

Date _____

Cover Page

Lab Name _____ Q.C. Report No. _____

Site Inventory No. _____

Region _____ Co. _____ Facility Name _____

Sample Numbers

IEPA
Monitor Point No.

Lab ID
Number

IEPA
Monitor Point No.

Lab ID
Number

Comments: _____

ICP Interelement and background corrections applied? Yes _____ No _____

If yes, corrections applied before _____ or after _____
generation of raw data.

Footnotes:

NR - not required by contract at this time

Chemical Analysis Form:

- Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP/Flame AA) or F (for furnace).
- U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
- E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
- s - Indicates value determined by Method of Standard Addition.
- R - Indicates spike sample recovery is not within control limits.
- * - Indicates duplicate analysis is not within control limits.
- + - Indicates the correlation coefficient for method of standard addition is less than 0.995.

000170

N 0277

Analysis Date

[illegible]

REPORTING
LEVEL

DIGITS TO L or R	L or OF DECIM
------------------------	---------------------

N 0279

LAB MEASUREMENTS
CONSTITUENT DESCRIPTION AND
REQUIRED UNIT OF MEASURE

STORET
NUMBER

REMARKS
SEE
INST.REPL
APP

<
OR
>

VALUE

REPORTING LEVEL	
DIGITS TO L or R	L or R OF DECIMAL

	30	34	35	36	37	38	47	48	49
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Footnotes:

For reporting results to IEPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Lab Manager

000272

N 0280

INITIAL AND CONTINUING CALIBRATION VERIFICATION³

LAB NAME _____ SITE INVENTORY NO. _____

DATE _____ UNITS _____

Compound	Initial Calib. ¹			Continuing Calibration ²					
	True Value	Found	%R	True Value	Found	%R	Found	%R	Method ⁴
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
Other:									

¹ Initial Calibration Source _____ ² Continuing Calibration Source _____
³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110
⁴ Indicate Analytical Method Used: P-ICP/Flame AA; F - Furnace

Q.C. Form II
Q.C. Report No. _____

BLANKS

LAB NAME _____ SITE INVENTORY NO. _____

DATE _____ UNITS _____

Matrix _____

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration Blank Value				Procedural Blank	
		1	2	3	4	1	2
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
Other:							

000275

N 0282

ICP INTERFERENCE CHECK SAMPLE

LAB NAME _____

DATE _____

Check Sample I.D. _____
Check Sample Source _____
Units _____

Compound	Control Limits ¹		True ²	Initial		Final	
	Mean	Std. Dev.		Observed	%R	Observed	%R
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium							
5. Beryllium							
6. Cadmium							
7. Calcium							
8. Chromium							
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver							
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other: _____							

¹ Mean value based on n = _____.

² True value of EPA ICP Interference Check Sample or contractor standard.

600070

N 0283

DUPLICATES

LAB NAME _____ SITE INVENTORY NO. _____

DATE _____ MONITOR POINT NO. _____

Lab Sample ID No. _____

Units _____

Matrix _____

Compound	Control Limit ¹	Sample(S)	Duplicate (D)	RPD ²
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				
16. _____				
17. _____				
18. _____				
19. _____				
20. _____				
21. _____				
22. _____				
23. _____				
24. _____				
Other: _____				

*Out of Control

RPD: Relative Percent Difference

¹ (+20%) ²RPD = $[S - D / ((S+D)/2)] \times 100$

NC-Non calculable RPD due to value(s) less than CRDL

SPIKE SAMPLE RECOVERY

LAB NAME _____ SITE INVENTORY NO. _____

DATE _____ MONITOR POINT NO. _____

Lab Sample ID No. _____

Units _____

Matrix _____

Compound	Control Limit	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	%R ¹
	%R				
1.	75-125				
2.	75-125				
3.	75-125				
4.	75-125				
5.	75-125				
6.	75-125				
7.	75-125				
8.	75-125				
9.	75-125				
10.	75-125				
11.	75-125				
12.	75-125				
13.	75-125				
14.	75-125				
15.	75-125				
16.	75-125				
17.	75-125				
18.	75-125				
19.	75-125				
20.	75-125				
21.	75-125				
22.	75-125				
23.	75-125				
24.	75-125				
Other:					

¹ %R = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: _____

SITE INVENTORY NO. _____

UNITS _____

+ - correlation coefficient is outside of control window of 0.995.

N 0286

Q. C. Report No.

LABORATORY CONTROL SAMPLE

LAB NAME _____

SITE INVENTORY NO. _____

DATE _____

(Circle One)

[illegible]

000280

N 0287

Form ~~III~~IV (Quarterly)
INSTRUMENT DETECTION LIMITS

Laboratory Name _____ ICP/Flame AA (Circle One) Model Number _____

Date _____ Furnace AA Number _____

Element	Wavelength (nm)	CDL (ug/L)	IDL (ug/L)	Element	Wavelength (nm)	CDL (ug/L)	IDL (ug/L)
1. Aluminum		200		13. Magnesium		5000	
2. Antimony		60		14. Manganese		15	
3. Arsenic		10		15. Mercury		0.2	
4. Barium		200		16. Nickel		40	
5. Beryllium		5		17. Potassium		5000	
6. Cadmium		5		18. Selenium		5	
7. Calcium		5000		19. Silver		10	
8. Chromium		10		20. Sodium		5000	
9. Cobalt		50		21. Thallium		10	
10. Copper		25		22. Tin		40	
11. Iron		100		23. Vanadium		50	
12. Lead		5		24. Zinc		20	

- Footnotes:
- . Indicate the instrument for which the IDL applies with a P (for ICP/Flame AA) or a F (for Furnace AA) behind the IDL value.
 - . Indicate elements commonly run with background correction (AA) with a B behind the analytical wavelength.
 - . If more than one ICP/Flame or Furnace AA is used, submit separate Forms for each instrument.

Comments: _____

Lab Manager _____

600181

N 0288

Form IX (Quarterly)

ICP Interelement Correction Factors

Laboratory _____

ICP Model Number _____

Date _____

Interelement Correction Factors
for

Analyte	Analyte Wavelength (nm)								
Antimony									
Arsenic									
Barium									
Beryllium									
Calcium									
Chromium									
Cobalt									
Copper									
Lead									
Manganese									
Mercury									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

Comments: _____

Lab Manager _____

C00187

N 0289

Form X (Quarterly)

ICP Linear Ranges

Laboratory Name _____ ICP Model Number _____

Date _____

Upper ICP Linearity Limits

Analyte	Integration Time (Seconds)	Concentration (ug/L)	Analyte	Integration Time (Seconds)	Concentration (ug/L)
1. Aluminum			13. Magnesium		
2. Antimony			14. Manganese		
3. Arsenic			15. Mercury		
4. Barium			16. Nickel		
5. Beryllium			17. Potassium		
6. Cadmium			18. Selenium		
7. Calcium			19. Silver		
8. Chromium			20. Sodium		
9. Cobalt			21. Thallium		
10. Copper			22. Tin		
11. Iron			23. Vanadium		
12. Lead			24. Zinc		

Footnotes: . Indicate elements not analyzed by ICP with the notation NA.

Comments: _____

Lab Manager _____

SS:sf/sp/640e,1-16

000187

N 0290

Illinois Environmental Protection Agency
Contract Laboratory Services
Organic Analysis Data Package

Date _____

Cover Page

Lab Name _____ Q.C. Report No. _____

Site Inventory No. _____ Facility Name _____

Region _____ County _____

DATA REPORTING QUALIFIERS FOR ORGANICS ANALYSIS

For reporting results, the following results qualifiers are used.
Additional flags or footnotes are encouraged. However, the definition
of such flags must be explicit.

Value- If the result is a value greater than or equal to the detection
limit, report the value.

U - Indicates compound was analyzed for but not detected. Report
with the detection limit value (e.g. 10U).

J - Indicates estimated value. This flag is used when estimating
the concentration of tentatively identified compounds.

C - This flag applies to pesticide parameters where the
identification has been confirmed by GC/MS.

B - This flag is used when the analyte being reported was also
found in the blank.

Contents Summary use additional page if necessary

IEPA I.D. No.	Lab. I.D. No.	Analysis Type	Analysis Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Narrative summary of any QC, sample, or analytical problems encountered
with the samples being reported. Attach additional sheet if necessary.

C00184

N 0291

Lab. I.D. No.

Analysis Type

Analysis Date

[illegible]

000155

N 0282

SITE INVENTORY NUMBER 9- - - - - TB MONITOR POINT NUMBER (see Instructions) T9- - - - - Z
REGION - - - - - CO. - - - - - DATE COLLECTED 234- - - - - 0- - - - - YZ
FACILITY NAME

FOR EPA USE ONLY	COMPLAINT NO.	BACKGROUND SAMPLE (X)	TIME COLLECTED
DATE RECEIVED	7-7-77	UNABLE TO COLLECT SAMPLE (see Instructions)	54 (24 HR CLOCK) 55H
SAMPLING PURPOSE CODE (see Instructions)	424-0-747	MONITOR POINT SAMPLED BY (see Instructions)	59
TIME CARD	48	SAMPLE FIELD FILTERED - INORGANICS (X)	60 OTHER (SPECIFY)
PROGRAM CODE	49-52		61
	& UNIT CODE		
	53		

63

TU3-----

COLLECTED BY	143 145	DIVISION OR CO.	TRANSPORTED BY	DIVISION OR CO.
	INITIALS			

600-36

FIELD MEASUREMENTS CONSTITUENT DESCRIPTION AND REQUIRED UNIT OF MEASURE	STORET NUMBER	REMARKS SEE INST.	REPL APP	< OR >	N VALUE	0293	REPORT LEVEL DIGITS TO L or R
DEPTH TO WATER (ft. below LS)	7 2 0 1 9 30 — — — — 34	35	36	37	38	— — — — —	47 48
ELEVATION OF GW SURFACE (ft. ref MSL)	7 1 9 9 3	—	—	—	—	— — — — —	—
TOTAL WELL DEPTH (ft. below LS)	7 2 0 0 8	—	—	—	—	— — — — —	—
ALKALINITY TOTAL (mg/l as CaCO ₃) -field	0 0 4 3 1	—	—	—	—	— — — — —	—
REDOX POTENTIAL (mV) (volt) -field	0 0 0 9 0	—	—	—	—	— — — — —	—
pH (units) -field	0 0 4 0 0	—	—	—	—	— — — — —	—
SPEC CONDUCTANCE (umhos) -field	0 0 0 9 4	—	—	—	—	— — — — —	—
TEMP OF WATER SAMPLE (°F) -field	0 0 0 1 1	—	—	—	—	— — — — —	—

LAB USE ONLY

LAB SAMPLE NO. _____ LAB NAME _____ Q.C. REPORT NO. _____

DATE RECEIVED _____ AND ADDRESS _____

TIME RECEIVED _____

SAMPLE TEMP OKAY _____ (Y/N) SAMPLE PROPERLY PRESERVED _____ (Y/N) DATE COMPLETED _____

LAB COMMENTS 150 _____

_____ T99

000187

N 0294

LAB MEASUREMENTS
CONSTITUENT DESCRIPTION AND
REQUIRED UNIT OF MEASURE

STORET
NUMBER

REMARKS
SEE
INST.REPL
APP

<
OR
>

VALUE

REPORTING LEVEL	
DIGITS TO L of R	L of R OF DECIMA

[illegible]

000188

N C235

**CHEMICAL ANALYSIS FORM
CONTRACT LABORATORY SERVICE**

LAB MEASUREMENTS CONSTITUENT DESCRIPTION AND REQUIRED UNIT OF MEASURE	STORET NUMBER	REMARKS		REPL APP	< OR >	VALUE	REPORTING LEVEL	
		SEE INST.					DIGITS TO L or R	L or R OF DECIMAL
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Footnotes: For reporting results to IEPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: _____

 Lab Manager _____

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. : Site Name

Contractor : Aqualab Inc.

Contract No. : 34

[illegible]

- * VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS
** ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits
Semi-Volatiles: _____ out of _____ ; outside of QC limits
Pesticides: _____ out of _____ ; outside of QC limits

Comments:

000230

N 0297

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Case No. : Site Name
Low _____ Medium _____

Contractor : Aqualab Inc.

Contract No. : 34

[illegible]

- VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS
- ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits
Semi-Volatiles: _____ out of _____ ; outside of QC limits
Pesticides: _____ out of _____ ; outside of QC limits

Comments:

000291

N 0258

WATER MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Case No. : Site Name

Contractor : Aqualab Inc.

Contract No. : 34

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	RPD	QC LIMITS *
VOA	1,1-Dichloroethene								14	61-145
SMO	Trichloroethene								14	71-120
SAMPLE NO	Chlorobenzene								13	75-130
	Toluene								13	76-125
1234-5678	Benzene								11	76-127
	1,2,4-Trichlorobenzene								28	39-98
B/N	Acenaphthene								31	46-118
SMO	2,4-Dinitrotoluene								38	24-96
SAMPLE NO	Pyrene								31	26-127
	N-Nitroso Di-n-Propylamine								38	41-116
1234-5678	1,4-Dichlorobenzene								28	36-97
	Pentachlorophenol								50	9-103
ACID	Phenol								42	12-89
SMO	2-Chlorophenol								40	27-123
SAMPLE NO	4-Chloro-3-Methylphenol								42	23-97
1234-5678	4-Nitrophenol								50	10-80
	Lindane								15	56-123
PEST	Heptachlor								20	40-131
SMO	Aldrin								22	40-120
SAMPLE NO	Dieldrin								18	52-126
	Endrin								21	56-121
1234-5678	4,4'-DDT								27	38-127

* - ASTERISKED VALUES ARE OUTSIDE QC LIMITS

RPD: VOAs ____ out of ____; outside QC limits
 B/N ____ out of ____; outside QC limits
 ACID ____ out of ____; outside QC limits
 PEST ____ out of ____; outside QC limits

RECOVERY: VOAs ____ out of ____; outside QC limits
 B/N ____ out of ____; outside QC limits
 ACID ____ out of ____; outside QC limits
 PEST ____ out of ____; outside QC limits

Comments: _____

SOIL MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

Case No. : Site Name

Contractor : Aqualab Inc.

Contract No. : 34

Low Level _____ Medium Level _____

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/Kg)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	QC LIMITS *
VOA	1,1-Dichloroethene							22	59-172
SMD	Trichloroethene							24	62-137
SAMPLE NO	Chlorobenzene							21	60-133
	Toluene							21	59-139
1234-5678	Benzene							21	66-142
	1,2,4-Trichlorobenzene							23	38-107
B/N	Acenaphthene							19	31-137
SMD	2,4-Dinitrotoluene							47	28-89
SAMPLE NO	Pyrene							36	35-142
	N-Nitroso Di-n-Propylamine							38	41-126
1234-5678	1,4-Dichlorobenzene							27	28-104
ACID	Pentachlorophenol							47	17-109
SMD	Phenol							35	26-90
SAMPLE NO	2-Chlorophenol							50	25-102
	4-Chloro-3-Methylphenol							33	26-103
1234-5678	4-Nitrophenol							50	11-114
	Lindane							50	46-127
PEST	Heptachlor							31	35-130
SMD	Aldrin							43	34-132
SAMPLE NO	Dieldrin							38	31-134
	Endrin							45	42-139
1234-5678	4,4'-DDT							50	23-134

* - ASTERISKED VALUES ARE OUTSIDE QC LIMITS

RPD: VOAs _____ out of _____; outside QC limits
 B/N _____ out of _____; outside QC limits
 ACID _____ out of _____; outside QC limits
 PEST _____ out of _____; outside QC limits

RECOVERY: VOAs _____ out of _____; outside QC limits
 B/N _____ out of _____; outside QC limits
 ACID _____ out of _____; outside QC limits
 PEST _____ out of _____; outside QC limits

Comments: _____

Decafluorotriphenylphosphine (DFTPP)

PC No. :

Date / Time :

Lab ID : _____ Data Release Authorized By: _____

m/z	ION ABUNDANCE CRITERIA	RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	_____
68	less than 2.0% of mass 69	_____ (____) #1
69	mass 69 relative abundance	_____
70	less than 2.0% of mass 69	_____ (____) #1
127	40.0 - 60.0% of mass 198	_____
197	less than 1.0% of mass 198	_____
198	base peak, 100% relative abundance	_____
199	5.0 - 9.0% of mass 198	_____
275	10.0 - 30.0% of mass 198	_____
365	greater than 1.00% of mass 198	_____
441	present, but less than mass 443	_____
442	greater than 40.0% of mass 198	_____
443	17.0 - 23.0% of mass 442	_____ (____) #2

#1 - Value in parenthesis is % mass 69.
#2 - Value in parenthesis is % mass 442.

[illegible]

GC/MS TUNING AND MASS CALIBRATION

4-Bromofluorobenzene (BFB)

Case : _____ Contractor Aqualab Inc. QC No. _____

Instrument ID _____ Date / Time _____

Lab ID _____ Data Release Authorized By: _____

m/z	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	_____
75	30.0 - 60.0% of the base peak	_____
95	Base peak, 100% relative abundance	_____
96	5.0 - 9.0% of the base peak	_____
173	less than 1.0% of base peak	_____
174	greater than 50.0% of the base peak	_____
175	5.0 - 9.0% of mass 174	_____ (____) %1
176	between 95.0 and 101.0% of mass 174	_____ (____) %1
177	5.0 - 9.0% of mass 176	_____ (____) %2

THIS PERFORMANCE TUNE APPLIES TO THE
FOLLOWING SAMPLES, BLANKS AND STANDARDS

#1 - Value in parenthesis is % mass 174.

#2 - Value in parenthesis is % mass 176.

[illegible]

600297

N 0302

METHOD BLANK SUMMARY

Case No. : Site Name

Region : U

Contractor : Aqualeb Inc.

Contract No. : 34

[illegible]

Comments :

CONTINUING CALIBRATION VERIFICATION
Acid Target Compounds

Date : _____

Instrument : _____

Lab Name : Aqualab Inc.

Initial Calibration Date : _____

COMPOUND	AREA	CALCULATED CONC.	TRUE CONC.	% RECOVERY	LIMITS
2-Chlorophenol					75 - 125%
Phenol					75 - 125%
2-Methylphenol					75 - 125%
4-Methylphenol					75 - 125%
2-Nitrophenol					75 - 125%
2,4-Dimethylphenol					75 - 125%
2,4-Dichlorophenol					75 - 125%
4-Chloro-3-Methylphenol					75 - 125%
2,4,6-Trichlorophenol					75 - 125%
2,4,5-Trichlorophenol					75 - 125%
2,4-Dinitrophenol					75 - 125%
4-Nitrophenol					75 - 125%
4,6-Dinitro-2-Methylphenol					75 - 125%
Pentachlorophenol					75 - 125%

4/86

600137

N 0304

CONTINUING CALIBRATION VERIFICATION
Base Neutral Target Compounds

Date :

Instrument :

Lab Name : Aqualab Inc.

Initial Calibration Date :

COMPOUND	AREA	CALCULATED CONC.	TRUE CONC.	% RECOVERY	LIMITS
Bis (2-Chloroethyl) Ether					75 - 125%
1,3-Dichlorobenzene					75 - 125%
1,4-Dichlorobenzene					75 - 125%
1,2-Dichlorobenzene					75 - 125%
Hexachloroethane					75 - 125%
N-Nitroso-Di-n-Propylamine					75 - 125%
bis (2-chloroisopropyl) ether					75 - 125%
Nitrobenzene					75 - 125%
N-nitrosodimethylamine					75 - 125%
Isophorone					75 - 125%
bis(-2-Chloroethoxy)Methane					75 - 125%
1,2,4-Trichlorobenzene					75 - 125%
Naphthalene					75 - 125%
Hexachlorobutadiene					75 - 125%
2-Chloronaphthalene					75 - 125%
Acenaphthylene					75 - 125%
Dimethyl Phthalate					75 - 125%
Acenaphthene					75 - 125%
Fluorene					75 - 125%
4-Chlorophenyl phenyl ether					75 - 125%
Diethyl Phthalate					75 - 125%
N-Nitrosodiphenylamine					75 - 125%
Hexachlorocyclopentadiene					75 - 125%
2,4-Dinitrotoluene					75 - 125%
2,6-Dinitrotoluene					75 - 125%
4-Bromophenyl phenyl ether					75 - 125%
Hexachlorobenzene					75 - 125%
Phenanthrene					75 - 125%
Anthracene					75 - 125%
Di-n-butylphthalate					75 - 125%
Fluoranthene					75 - 125%
Benz(a)anthracene					75 - 125%
Chrysene					75 - 125%
Benzidine					75 - 125%
3,3'-Dichlorobenzidine					75 - 125%
Butylbenzylphthalate					75 - 125%
bis(2-ethylhexyl)phthalate					75 - 125%
3,4-Benzofluoranthene					75 - 125%
Benzo(k)fluoranthene					75 - 125%
Benz(a)pyrene					75 - 125%
Indeno(1,2,3-c,d)pyrene					75 - 125%
Dibenz(a,h)anthracene					75 - 125%
Benzo(g,h,i)perylene					75 - 125%
Di-n-octylphthalate					75 - 125%

N-0305

000198

CONTINUING CALIBRATION VERIFICATION
Pesticide Target Compounds

Date : _____

Instrument : _____

Lab Name : Aqualab Inc.

Initial Calibration Date : _____

COMPOUND	AREA	CALCULATED CONC.	TRUE CONC.	% RECOVERY	LIMITS
alpha-BHC					75-125%
beta-BHC					75-125%
delta-BHC					75-125%
Lindane (gamma-BHC)					75-125%
Heptachlor					75-125%
Aldrin					75-125%
Heptachlor epoxide					75-125%
Endosulfan I					75-125%
4,4'-DDE					75-125%
Dieldrin					75-125%
Endrin					75-125%
4,4'-DDD					75-125%
Endosulfan II					75-125%
4,4'-DDT					75-125%
Endrin aldehyde					75-125%
Endosulfan sulfate					75-125%
Mirex					75-125%
Methoxychlor					75-125%
Chlordane					75-125%
Toxaphene					75-125%
Arochlor-1016					75-125%
Arochlor-1221					75-125%
Arochlor-1232					75-125%
Arochlor-1242					75-125%
Arochlor-1248					75-125%
Arochlor-1254					75-125%
Arochlor-1260					75-125%

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600199

N 0306

CONTINUING CALIBRATION VERIFICATION
Volatile Target Compounds

Date : _____

Instrument : _____

Lab Name : Aqualab Inc.

Initial Calibration Date : _____

COMPOUND	AREA	CALCULATED CONC.	TRUE CONC.	% RECOVERY	LIMITS
1,1-dichloroethylene					
Methylene Chloride					
1,2-trans-dichloroethylene					
1,1-Dichloroethane					
1,2-cis-dichloroethylene					
Chloroform					
1,1,1-Trichloroethane					
1,2-Dichloroethane					
Benzene					
Carbon tetrachloride					
1,2-dichloropropane					
Trichloroethylene					
Bromodichloromethane					
2-Chloroethyl vinyl ether					
1,3-trans-dichloropropene					
Toluene					
1,3-cis-dichloropropene					
1,1,2-trichloroethane					
Dibromochloromethane					
Tetrachloroethylene					
Chlorobenzene					
Ethylbenzene					
m-xylene					
Bromoform					
O-xylene					
1,1,2,2-tetrachloroethane					
1,3-Dichlorobenzene					
1,4-dichlorobenzene					
1,2-Dichlorobenzene					

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N 0307

APPENDIX B
ASBESTEST KIT VENDOR'S INFORMATION

600-0-

N 0308

PACKAGE INSERT
INSTRUCTIONS

Asbestest[®]

Test Kit for Screening Sample Materials for Possible Presence of Asbestos

1. INTRODUCTION

The EC Asbestest[™] procedure is a colormetric qualitative test for the detection of magnesium and iron from asbestos in bulk samples. Results may be saved in the reaction tube for future reference. The test uses a small sample, about 1/4 inch in diameter by no more than 1/4 inch thick, which is processed using a step-by-step procedure. No special training or other equipment is necessary to produce results.

2. HISTORY

Asbestos has been known to exist for several millennia and the word asbestos evolves from a Greek word meaning inextinguishable or incombustible. Only in the last 100 years, however, has the material come into wide usage. It is mined chiefly in Canada, Russia and South Africa.

The material has been used widely for electrical and thermal insulation, mainly in six forms of various composition throughout the world. Ninety percent (90%) of the existing asbestos is in the form of chrysotile which is an iron free form of asbestos that contains only magnesium.

In the 1880's health hazards and related deaths were noted in workers in France and England in plants where airborne asbestos fiber was prevalent. The first complete description of asbestosis was in 1927. This is a disease resulting from breathing small particles of asbestos dust which forms scar tissue in the lung that causes breathlessness after prolonged exposure. Lung cancer and mesothelioma are also diseases associated with exposure to asbestos dust.

Although it is the airborne asbestos that creates the health hazard, the presence of solid asbestos can be potentially airborne by mechanical or pneumatic disruption.

3. INTENDED USES

This kit is intended to be used for wet chemical analysis of silicon bound magnesium and/or iron which is found in asbestos and asbestos containing materials. In certain forms of asbestos only magnesium is present and in other forms only iron is present, while in several forms both are present. The sample is first treated to wash away unwanted and interfering substances and then the magnesium and/or iron is released from the sample by chemical treatment and an appropriate color reagent is added which turns a specific color.

4. SUMMARY AND EXPLANATION OF THE TEST

The identification of asbestos in solid materials is the first step in identifying a potential airborne asbestos problem. Various techniques can be used to identify asbestos and these include optical microscopy, electron optical microscopy, X-ray refractometry, infra-red spectrophotometry, thermal analysis, and elemental analysis. The basis of the Asbestest[™] is elemental analysis but, because it is a screening technique which might have some interferences, positive samples should be confirmed by other techniques.

The six different types of asbestos and their approximate chemical formulas are as follows:

1. Chrysotile ($\text{MgO} \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$)
2. Amosite [$(\text{FeMg})\text{SiO}_3$]
3. Crocidolite [$(\text{NaFe}(\text{SiO}_3)_2 \cdot \text{FeSiO}_3 \cdot \text{H}_2\text{O})$]
4. Anthophyllite [$(\text{MgFe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$]
5. Tremolite [$\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$]
6. Actinolite [$\text{CaO} \cdot 3(\text{MgFe})\text{O} \cdot 4\text{SiO}_2$]

Please note that asbestos is a naturally occurring compound and the chemical formulas are only approximate. It has been found that chrysotile and tremolite samples sometimes give positive results for iron. The iron test has been found to be the most sensitive and it may be used first to avoid the need to perform the magnesium test if a positive result is obtained.

5. PRINCIPLES OF THE PROCEDURE

The magnesium and iron elemental analyses are done in the column reaction tube using stepwise sample treatment by first washing away the unwanted materials and then releasing the magnesium and/or iron, if present, from the remaining materials which will react with the respective color reagents.

6. REAGENTS

(i) Chemicals

Magnesium Test:
Glycerin (Mg-1)
Phosphoric Acid (Mg-2).
10 Normal Sodium Hydroxide (Mg-3)
Magnesium Color Reagent (Mg-4)
4- (p-Nitrophenylazo) Resorcinol
Magnesium Positive Control

Iron Test:
Acetic Acid (Fe-1)
Sulfuric Acid (Fe-2)
Hydrofluoric Acid (Fe-3)
Iron Color Reagent (Fe-4)
1,10 Phenanthroline
Iron Positive Control

General Reagent:
Distilled Water

(ii) Labware

55 Polypropylene columns with caps, 6 funnels,
50ml beaker, forceps, 2ml syringe, teflon stirring
rod, test tube rack, wax pencil.

(iii) Precautions

The contents of this kit may be poisonous and/or corrosive so contact with the skin or other parts of the human body should be avoided. If skin or eye contact is made with any of the materials accidentally, the area should be washed with copious quantities of water. If skin or eye redness persists, a physician should be consulted immediately. If any of the reagents are ingested, they should be considered poisonous and the nearest poison control center should be telephoned before taking any action. Material Safety Data Sheets for each chemical are provided with each kit.

(iv) Instructions

No mixing or dilution of the chemicals in this kit is required. The shipping caps are replaced with the stopper caps. It is necessary when first using the kit to remove the shipping seal from the distilled water bottle. Also, because of government regulations, the Iron Color Reagent is shipped in a separate package. This should now be combined with the kit. Please note that if reshipping the kit, the Iron Color Reagent must be removed and shipped separately. The stopper caps must also be removed from the bottles and the shipping caps reapplied.

7. STORAGE AND STABILITY

The kit may be stored at room temperature but extreme temperatures, above 100°F or below 32°F, should be avoided. The kit has a useful life of twelve months from date of shipment with the chemicals stored with the shipping caps (not the dropper caps).

8. PURIFICATION

No purification of the chemicals is required prior to use. Precipitation (crystals deposited) or concentration due to evaporation of the chemicals is an indication of chemical deterioration. Also, improper reaction with the positive controls or with blank samples is an indication of deterioration. The kit should be discarded if deterioration is suspected.

9. INSTRUMENTATION

No instrumentation is necessary for use with this kit.

10. SPECIMEN COLLECTION AND HANDLING

Specimens should be obtained in a most careful manner so airborne asbestos will not be inhaled by the persons gathering the material. Accurate identification of each sample location is important for future reference work.

The sample size should be about ¼ inch in diameter and no more than ¼ inch thick. Thinner samples are desirable since they will not plug the pores of the filter disk in each of the column reaction chambers and will speed the actual final analysis.

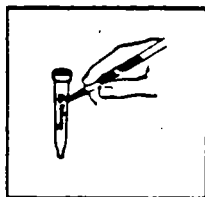
The magnesium test sensitivity may be increased by doubling the amount of the sample indicated above and adding a few extra drops of glycerin in step 1d. (There is sufficient glycerin provided.)

NOTE: The test is sensitive to sample size. When in doubt use a larger sample.

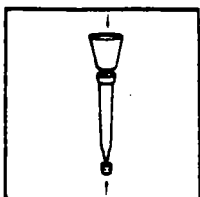
11. PROCEDURES

Instructions: Magnesium test on unknown sample

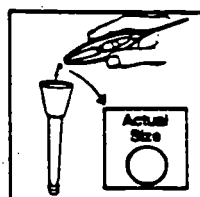
1. Glycerin Treatment



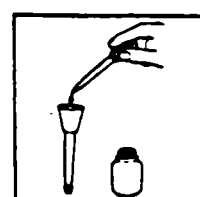
- a. Mark test column with wax pencil for future reference.



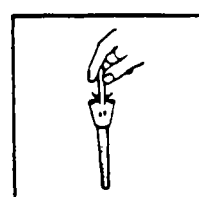
- b. Attach funnel and small cap to column.



- c. Place a small portion of the unknown sample, approximately the size of a small pea, into the column.

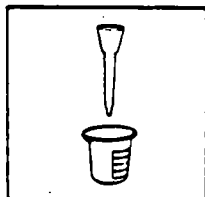


- d. Add five (5) drops of Reagent Mg-1 Glycenn.

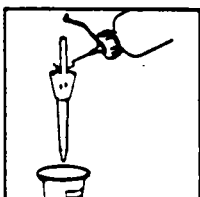


- e. Mix well with stirring rod.

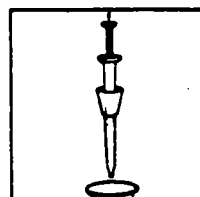
2. Distilled Water Wash (50 ml)



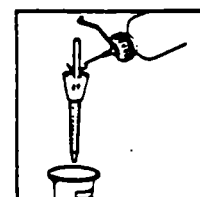
- a. Remove small cap and hold column outlet over beaker.



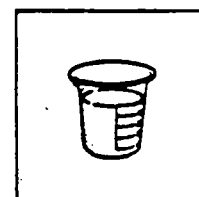
- b. Rinse stirring rod of adhered sample with small amount of distilled water from water bottle into column. Drain into 50 ml. beaker.



- b. When necessary for drainage, the supplied syringe can be inserted into top of column to apply pressure.

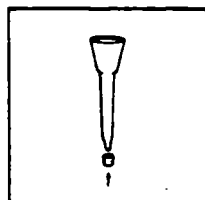


- Continue to wash the sample with distilled water, mixing with stirring rod, and forcing through with syringe if necessary.

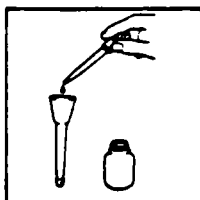


- until 50 ml of distilled water has been collected in the beaker. The column must be drained completely to eliminate dilution of other reagents.

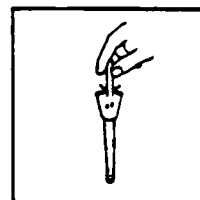
3. Phosphoric Acid Treatment (Release of chrysotile Mg^{+2})



- a. Cap bottom of column with small cap.

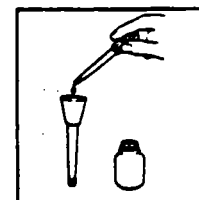


- b. Add one (1) drop of Reagent Mg-2 Phosphoric Acid.



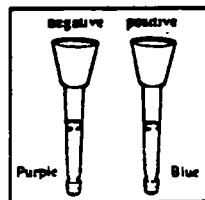
- c. Mix well by grinding sample with stirring rod.

4. 10N Sodium Hydroxide Treatment (Alkalinization)

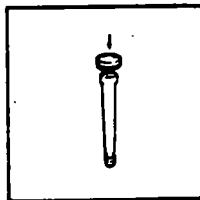


- a. Add five (5) drops of Reagent Mg-3 10N Sodium Hydroxide and mix with stirring rod.

5. Color Complexing



- a. Add Five (5) drops of Reagent Mg-4 Magnesium Color Reagent and stir. Note any color change. Add five (5) additional drops of Reagent Mg-4 and observe final color.



- b. Remove Funnel and cap column for storage and permanent record.

Blue color indicates asbestos may be present. A yellow color indicates the probable presence of silicon bound iron. Proceed to the Iron test.

Magnesium test on positive control sample

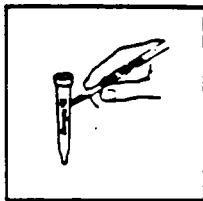
Because magnesium in the positive control is not bound and need not be released by a glycerin treatment and wash, steps 1 and 2 of the Magnesium test may be eliminated. Start test with Phosphoric Acid treatment (Step 3). Follow steps 3-5 and note blue color. Keep capped as permanent positive control when determining unknown.

600704

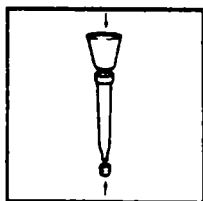
N 0311

Instructions:
Iron test on unknown sample

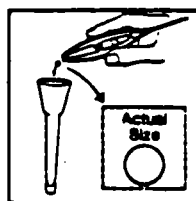
1. Acid Wash
(Acetic Acid and Sulfuric Acid)



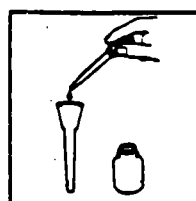
a. Mark test column with wax pencil for future reference.



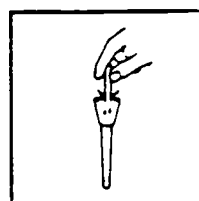
b. Attach funnel and small cap to column.



c. Place a small portion of the unknown sample, approximately the size of a small pea, into the column.

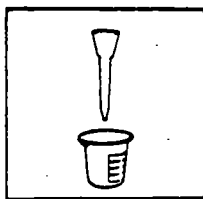


d. Add five (5) drops of Reagent Fe-1 Acetic Acid and five (5) drops Reagent Fe-2 Sulfuric Acid.

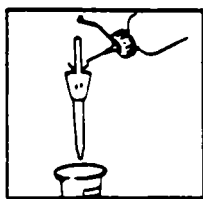


e. Mix well with stirring rod.

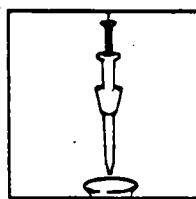
2. Distilled Water Wash
(50 ml)



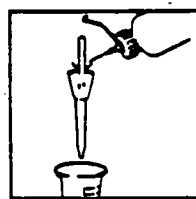
a. Remove small cap and hold column outlet over beaker.



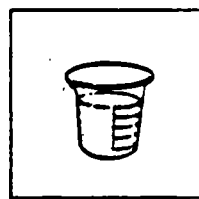
Rinse stirring rod of adhered sample with a small amount of distilled water from water bottle into column. Drain into 50 ml. beaker.



b. When necessary for drainage, the supplied syringe can be inserted into top of column to apply pressure.

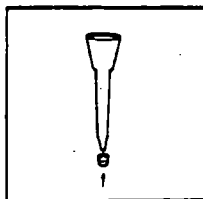


Continue to wash the sample with distilled water, mixing with stirring rod, and forcing through with syringe if necessary.

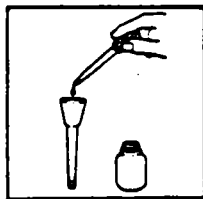


until 50 ml of distilled water has been collected in the beaker. The column must be drained completely to eliminate dilution of other reagents.

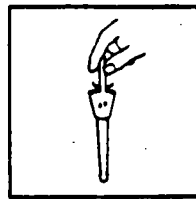
3. Hydrofluoric Acid Treatment
(Release of Fe^{+2})



a. Cap bottom of column with small cap.

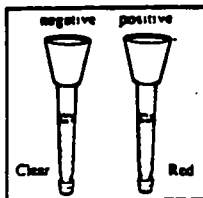


b. Add one (1) drop of Reagent Fe-3 Hydrofluoric Acid.

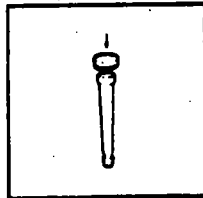


c. Mix well by grinding sample with stirring rod.

4. Color Complexing



a. Add five (5) drops of Reagent Fe-4 Iron Color Reagent, mix and observe color.



b. Remove funnel and cap column for storage and permanent record.

Paint Orange to Blood Red color indicates asbestos may be present.

**Iron test
on positive control sample**

Because iron in the positive control is not bound, the Acid Wash need not be performed. Start test with Hydrofluoric Acid treatment (Step 3). Follow steps 3 & 4 and note red color. Keep capped as permanent positive control when determining unknown.

12. RESULTS

If both the magnesium and iron tests are negative, there is little probability that asbestos is present. If one of the tests is positive, then additional tests should be made on similarly obtained samples to confirm the presence or absence of asbestos.

13. LIMITATIONS OF THE PROCEDURE

The purpose of the tests is rapid identification of silicon bound magnesium and bound iron which are found in forms of asbestos. Other forms of silicon bound magnesium and iron will also interfere with the test and give positive results. These include naturally occurring compounds with the same chemical formula as asbestos but with a length to diameter ratio of less than 3 to 1 and not considered dangerous at this time. Also, recently man-made compounds, particularly those manufactured at high temperatures may have silicon bound iron or magnesium which give a positive result. Very small amounts of asbestos present in solid samples will give negative results, but if the material becomes airborne it may present an ultimate health hazard. Negative results on solid materials do not mean that airborne asbestos is not present in the location being tested. Because this test is not designed to sample airborne materials, other sophisticated techniques are necessary to identify airborne asbestos. The test is sensitive to sample size. When in doubt, use a larger sample. It is important to complete all the analysis steps correctly to achieve proper results.

14. SPECIFIC PERFORMANCE CHARACTERISTICS

In 100 tests, samples known to contain at least 1% asbestos had a specificity of 100%.

15. MANUFACTURER

E-C Apparatus Corporation
3831 Tyrone Boulevard N.
St. Petersburg, Florida 33709
Tel: (813) 344-1644

16. DATE OF ISSUANCE

October 1, 1986

N 0313

600706



E-C APPARATUS CORPORATION

3831 Tyrone Boulevard N.
St. Petersburg, Florida 33709
Phone: 813-344-1644

Toll Free — Outside Florida: 800-624-2232 Ext. 67
Inside Florida: 800-282-7932
Outside USA: Telex 51-4736 HALA

600307

N 0314

APPENDIX C

FIGURES

CHAIN OF CUSTODY FORM

TWC PERMIT NO. _____

EPA PERMIT NO. _____

OTHER _____

FIELD INFORMATION AND ANALYSES

POINT OF COLLECTION _____

DATE _____ TIME _____ COLLECTOR _____

TYPE OF SAMPLE _____

OBSERVATIONS _____

LABORATORY ANALYSES

TRANSMITTAL

SIGNATURE OF COLLECTOR _____ DATE _____ TIME _____

SIGNATURE OF COURIER _____ DATE _____ TIME _____

SIGNATURE OF COURIER _____ DATE _____ TIME _____

SIGNATURE OF LABORATORY
REPRESENTATIVE _____ DATE _____ TIME _____

_____ DATE _____ TIME _____

600709

FIGURE 1
N 0316

Drawing

DBP- 002

DBP- 003

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N 0317

SITE SAFETY PLAN

C00011

N 0318

SITE SAFETY PLAN
PHASE III SITE INVESTIGATION
DUTCH BOY PAINT PLANT SITE
CHICAGO, ILLINOIS

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SECTION 1 - INTRODUCTION AND BACKGROUND INFORMATION

This document is the General Health and Safety Plan for site activities to be conducted during the Phase III Site Investigation being performed on and in the vicinity of the Dutch Boy Paint Plant Site in Chicago, Illinois by Toxcon Engineering Company.

All personnel (including employees of Toxcon Engineering Company, employees of all subcontractors, all visitors and representatives from the Illinois Environmental Protection Agency (IEPA), local groups, media, etc.) will be required to adhere to the procedures set forth in this plan. All personnel will also be required to report to the Site Health and Safety Officer (SHSO) before proceeding on-site. All personnel will be required to sign a form indicating they have read and thoroughly understand the guidelines herein.

1.01 Identification

Site Name: Dutch Boy Paint Plant Site

Address/Location: 120th and Peoria Streets
Chicago, Illinois

Project Description: Phase III Site Investigation

On-Site Work Dates: 8-10 days, following the date of
approval of the Phase III Site
Investigation Plan

1.02 Key Personnel for Phase III Site Investigation

IEPA Contacts: Mary Dinkel 217/782-6760
Jim Janssen 217/782-6760

Toxcon Engineering Company: Robert Finkelstein 713/870-0115
Deborah Romanowski 713/870-0115

Site Health and Safety Officer: Robert Finkelstein
713/870-0115

1.03 Site Description

Type of Facility: Former paint plant site.

Size: Site is 375 feet by 580 feet.

Buildings: One (see Figure 1).

Surrounding Land Uses: Industrial.

Layout: See Figure 1.

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1.04 Site History

The Dutch Boy Paint Plant Site was used for the production of lead products and paint until 1980.

An IEPA Remedial Project Management Section site visit was conducted on May 15 and 16 of 1986. A visual inspection was undertaken and subsequent sampling was performed. An inventory revealed that several pieces of production equipment still contained material believed to contain lead products and residues. Also, much insulation, believed to contain asbestos, was present throughout the building. Several underground storage tanks were located on the site. Sampling indicated fluids contained therein had a flash point of less than 100 degrees F.

Pursuant to a Record of Decision issued by the Director of the IEPA on June 6, 1986, IEPA commenced an immediate removal action in order to prevent and/or mitigate the release at the site of hazardous substances, namely lead and asbestos.

IEPA's first step in connection with the immediate removal action was to remove and dispose of lead dust and asbestos from partially demolished structures at the site and from certain manufacturing equipment. Upon completion of this portion of the removal action, known as Phase I, IEPA undertook Phase II of the clean-up which included the removal of piles of debris at the site resulting from the ongoing demolition and scavenging.

All solid wastes, demolition debris and all liquid wastes in underground storage tanks have now been removed and disposed of except the following:

- 1) Residues of linseed oil were left in the four storage tanks located in the Mill Building basement (see Figure 1).
- 2) An area approximately 80 feet long by 20 feet wide located where the Boiler Room used to be (see Figure 1) contains demolition debris. IEPA believes this debris may be 10-15 feet thick. IEPA was unable to remove this waste in Phase II because of equipment limitations.
- 3) An area approximately 80 feet long by 30 feet wide where the Locker Room used to be (see Figure 1) is covered with demolition debris. This debris might contain lead compounds.
- 4) The southeast corner of the property contains large piles of municipal garbage.

1.05 Summary of Site Hazards

Soils and demolition debris on the site may contain elevated levels of lead, asbestos and volatile organics.

1.06 Project Description and Purpose

The Phase III Site Investigation will include those activities (surveying, sampling, etc.) necessary to determine the nature, extent and concentration of lead, asbestos and volatile organics that may exist in on-site soils. In addition, lead levels in off-site soils will be evaluated.

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SECTION 2 - PROTOCOLS

2.01 Health and Safety Management and Responsibilities

Robert Finkelstein has responsibility for the safety of operations and Health and Safety of all contractor personnel. Following an initial safety reconnaissance, Mr. Finkelstein may designate an on site representative to institute required procedures.

Subcontractors and Government Oversight Personnel

All subcontractors are required to adhere to the requirements of this General Health and Safety Plan and related Task Specific Health and Safety Plans. They may upgrade their level of personal protection where necessary in order to comply with their own corporate Health and Safety requirements.

2.02 General Requirements for Entry to Activity Areas

Before proceeding onto the site past the Entry and Exit Point, all Toxcon Engineering Company and subcontractor personnel shall:

1. Be advised of the Health and Safety Plan, instructed in safety procedures and aware of potential hazards. (Attachment A is a list of Standard Operating Procedures that will be enforced during Phase III operations.)
2. Be properly dressed and equipped.
3. Notify the SHSO or his designated representative.

Before leaving the site, all personnel will go through appropriate decontamination (discussed in 3.07).

2.03 Employee Training

In accordance with OSHA guidelines 29 CFR 1910 Hazardous Waste Operations and Emergency Response; Interim Final Rule dated Friday December 19, 1986, all personnel involved in on-site activities have been trained and have practical experience with hazardous waste operations. At a minimum, all personnel have prior field experience at hazardous waste sites at Level C. If site conditions change such that Level B or A conditions arise, all operations will cease and the site will be evacuated.

2.04 Medical Surveillance

Due to the low hazard level (discussed further in Section 3), no special medical surveillance will be performed. The SHSO may require analyses for lead blood levels if he feels that any significant exposure has occurred.

2.05 Air Monitoring

Air monitoring will be done using personnel samplers. Personnel air samplers will be worn by the Driller and the Geologist on the drilling crew. A background sample will be taken the day before drilling operations begin. When drilling operations begin, samples will be taken and analyzed for lead during the first day of sampling. Cartridges will be analyzed for lead using NIOSH Method 7082. If lead concentrations are found to be greater than 0.05 mg/m³, dust masks will be worn during site sampling operations. If sampling indicates that lead concentrations are less than 0.05 mg/m³, the SHSO will still have the option of requiring that dust masks be worn if deemed necessary.

An HNU monitoring device will be used during the VOC sampling. The use of different levels of protection as determined by ambient air monitoring is as follows:

Background	Level D
0 - 5	Level C
5 - 500	Level B
500 - 1000	Level A

The maximum value for Level C protection is 5 HNU Units, and will be the standard used during Phase III operations. If HNU readings exceed 5 Units during drilling operations, drilling will cease and the hole will be immediately back-grouted.

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SECTION 3 - HAZARD EVALUATION

3.01 Hazardous Materials Potentially On-Site

The hazardous materials potentially on the Dutch Boy Paint Plant Site are:

lead
asbestos
volatile organics

Though elevated levels of these substances have been previously measured on-site, current levels are estimated to be low. IEPA has removed most of the demolition rubble in their Phase I and Phase II clean-up efforts (discussed in 1.04). If elevated levels of these materials exist on-site, it is expected that they are confined to the soils and areas where uncovered debris is located (discussed in 1.05).

3.02 General Hazards

The potential for slips, trips and falls exists due to uneven ground level, debris piles, empty tanks, and various excavated areas on the site.

3.03 Overall Degree of Hazard

Low.

3.04 Specific Hazards

Routes of exposure of site workers to the previously mentioned hazardous components include all of the following:

- direct contact via skin, eyes or mouth
- inhalation of dust

The specific hazards of the materials are briefly described below:

1. Lead - If ingested, lead is a toxin at elevated levels, having a detrimental affect on the nervous system, kidneys, blood and bone marrow.
2. Asbestos - Prolonged inhalation and expiration of asbestos particles can lead to cancer of the respiratory track, lungs and intestines.
3. Volatile Organics - flammable .

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Because of the above potential hazards, all persons working or observing activities on the site should minimize their exposure to any dust generated or soil samples taken on site.

3.05 Contact/Respiratory Protection

During the Phase III Site Investigation, two levels of protective clothing will be required.

- 1) Level D protection will be required for all off-site sampling. The dress requirements for Level D protection will be:

- Safety work boots
- Cotton or Tyvek coverall
- Protective eyewear
- Disposable surgical gloves
- Hard hat

No respiratory protection is necessary for Level D.

- 2) Modified Level C protection will be required for all on-site soil sampling and as directed by the SHSO. The dress requirements for this modified Level C protection will be:

- Rubber safety boots or safety work boots with rubber overboots
- Work clothing with Tyvek coveralls
- Chemical resistant gloves
- Protective eyewear
- Hard hat
- Half-face respirator (when required by SHSO)

3.06 Decontamination

Personnel

As a minimum, all personnel entering the site will go through the following decontamination upon exiting:

1. Boot wash (detergent or water).
2. Boot rinse (water).
3. Glove wash (detergent and water).
4. Glove rinse.
5. Removal of boots, tyveks and then gloves.

Sample Containers

After obtaining the sample, all containers will be decontaminated with a detergent/water wash and water rinse.

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Sampling Equipment

All reusable sampling equipment (buckets, split-spoons, Shelby tubes, etc.) will undergo the following decontamination prior to initial use on site, between each use, and upon final use. Equipment shall be cleaned of all visible contamination.

1. Thorough detergent/water wash.
2. Tap water rinse.

After decontaminating, sample equipment shall be placed in clean plastic bags or other suitable wrapping to prevent recontamination. Wash and rinse water will be containerized for proper disposal or poured onto the 80 foot by 20 foot area (henceforth, the Boiler area) which contains demolition rubble that IEPA suspects contains elevated lead levels.

Geotechnical Apparatus

All technical/geotechnical apparatus such as augers, rods, drill bits, casings, etc., and backhoe buckets (where used to excavate for sampling) will undergo the following decontamination prior to removal from the site to remove all visible contamination and soils:

1. Thorough detergent/water wash and/or steam cleaning.
2. Tap water rinse.

This wash and rinse should be performed on a concrete surface near the Boiler area. The soils washed off of the equipment will be allowed to dry and the soils will be consolidated and placed on the Boiler area.

Heavy Equipment

All trucks, drill rigs, backhoes, or other equipment will undergo decontamination prior to leaving the site. The decontamination, as a minimum, will require a cleaning of tires and treads to remove all visible soils and debris. This cleaning will be performed on a concrete surface near the Boiler area. The soils washed off of the equipment will be allowed to dry and the solids will be consolidated and placed on the Boiler area.

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SECTION 4 - EMERGENCY INFORMATION

4.01 Emergency Telephone Numbers

Local Sources of Assistance:

1. Hospital: St. Francis
12935 S. Gregory, Blue Island
(312) 597-2000
Directions: South on Halstead to 127th, right on 127th to Western Ave., left on Western to York, left on York to Gregory, St. Francis is on the right. See map - Figure 2.

Travel Time: Approximately 15 minutes

Alternative: Christ Community (Trauma Unit)
4440 W. 95th St., Oaklawn
(312) 425-8000
Directions: North on Halstead to 95th St., left on 95th to Kostner Ave., right on Kostner, Christ Community is on the right. See map - Figure 3.
2. Ambulance: (312) 347-1313 Chicago
(312) 385-4131 Calumet Park
3. Fire Department: (312) 347-1313 Chicago
(312) 385-4131 Calumet Park
4. Police: 911 Chicago
385-4131 Calumet Park
5. Emergency Services and Disaster Agency (ESDA):
(217) 782-7860

SECTION 5 - FIRST AID FOR EXPOSURE

The following is a general description of first aid measures to be employed on site. In all cases of symptoms of chemical exposure, first aid treatment is to be followed by full medical examination.

5.01 Inhalation

Symptoms: dizziness, nausea, lack of coordination, headache, irregular rapid breathing, weakness, loss of consciousness, coma.

- Treatment:
- 1) Bring victim to fresh air. Rinse eyes or throat if irritated.
 - 2) If severe (victim vomits, is very dizzy or groggy, etc.) evacuate to a hospital.
 - 3) Be prepared to administer CPR.
 - 4) Evacuate victim to hospital.

5.02 Dermal

Symptoms: Same as above. Solvents may produce irritation, rash or burning.

- Treatment:
- 1) Flush affected area with water for 5 minutes.
 - 2) Cover with a clean dressing.
 - 3) Monitor victim for at least 48 hours.

5.03 Ingestion

Symptoms: Same as above, with stomach cramps.

- Treatment:
- 1) Evacuate victim to hospital.
 - 2) If any sign of burns are obvious, do not induce vomiting.

5.04 Eye Contact

Symptoms: Redness, irritation, pain, impaired vision.

- Treatment:
- 1) Flush with water for at least 5 minutes using a portable eyewash unit.
 - 2) If severe, evacuate victim to a hospital.

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I have read the site safety plan for this site and fully understand its contents:

NAME _____

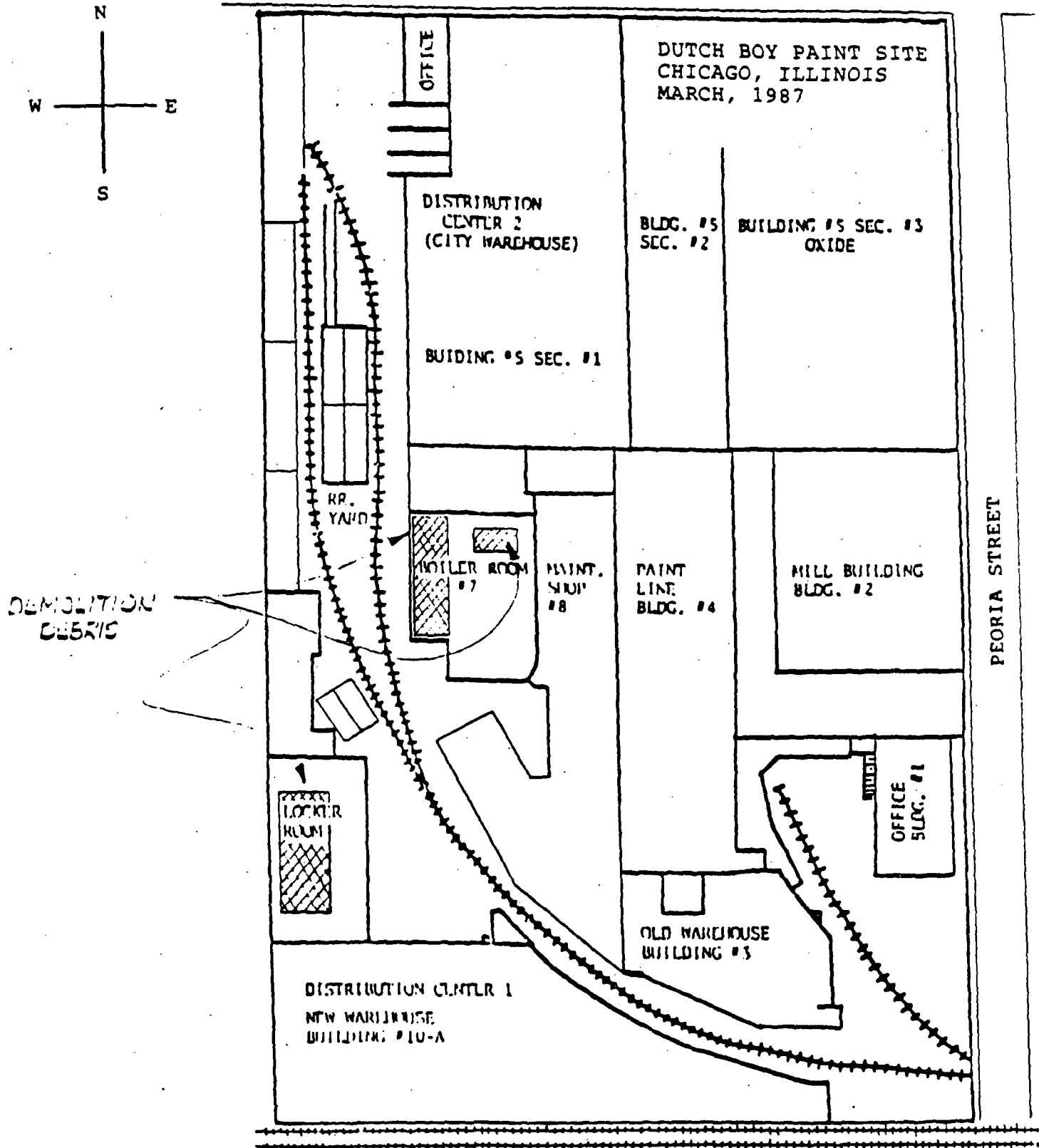
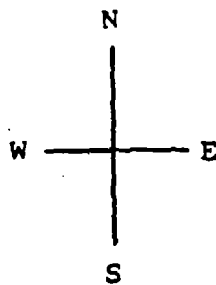
DATE _____

[illegible]

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N 0331

120th STREET



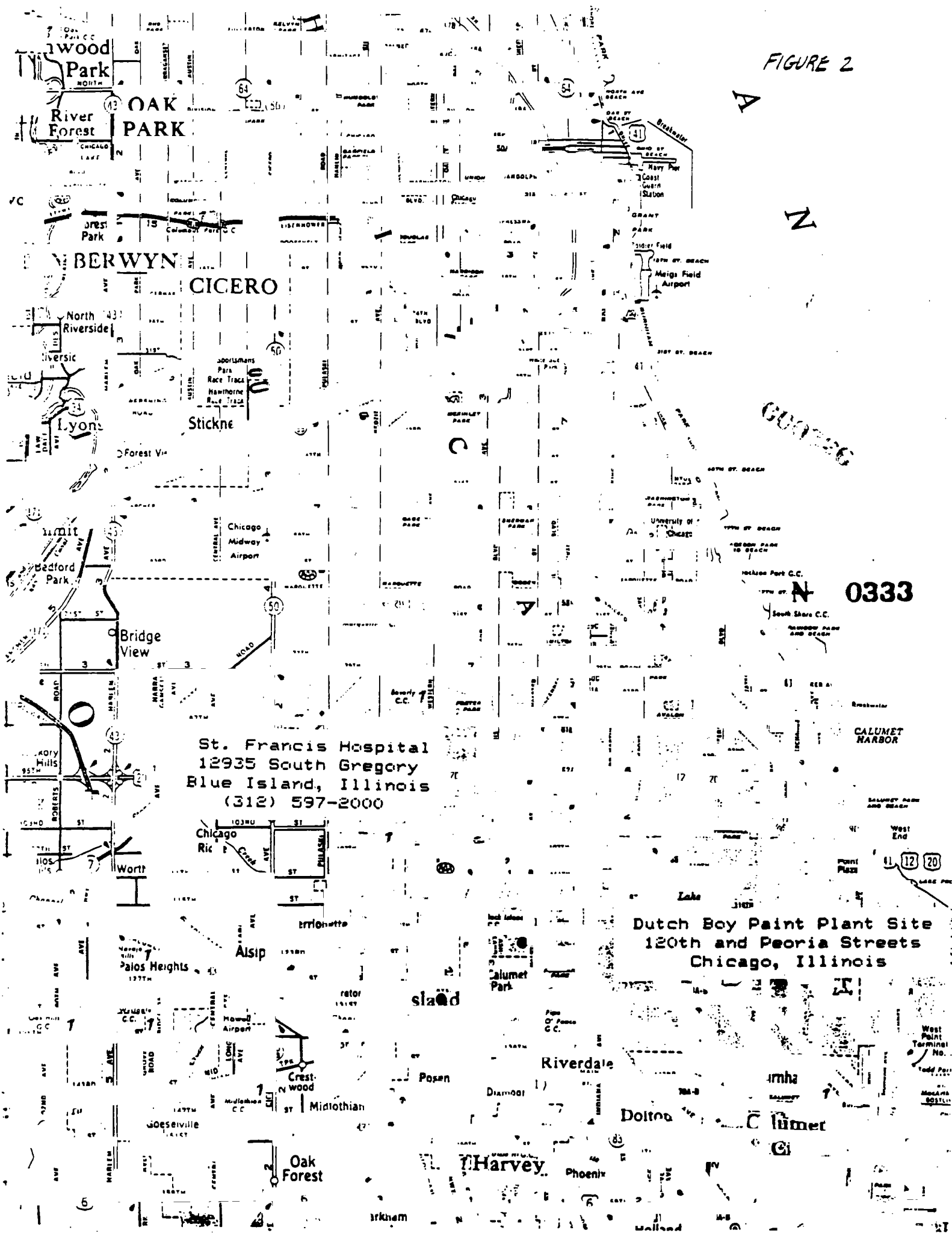
AREAS CONTAINING DEBRIS

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FIGURE 1
DBP-001

FIGURE 2

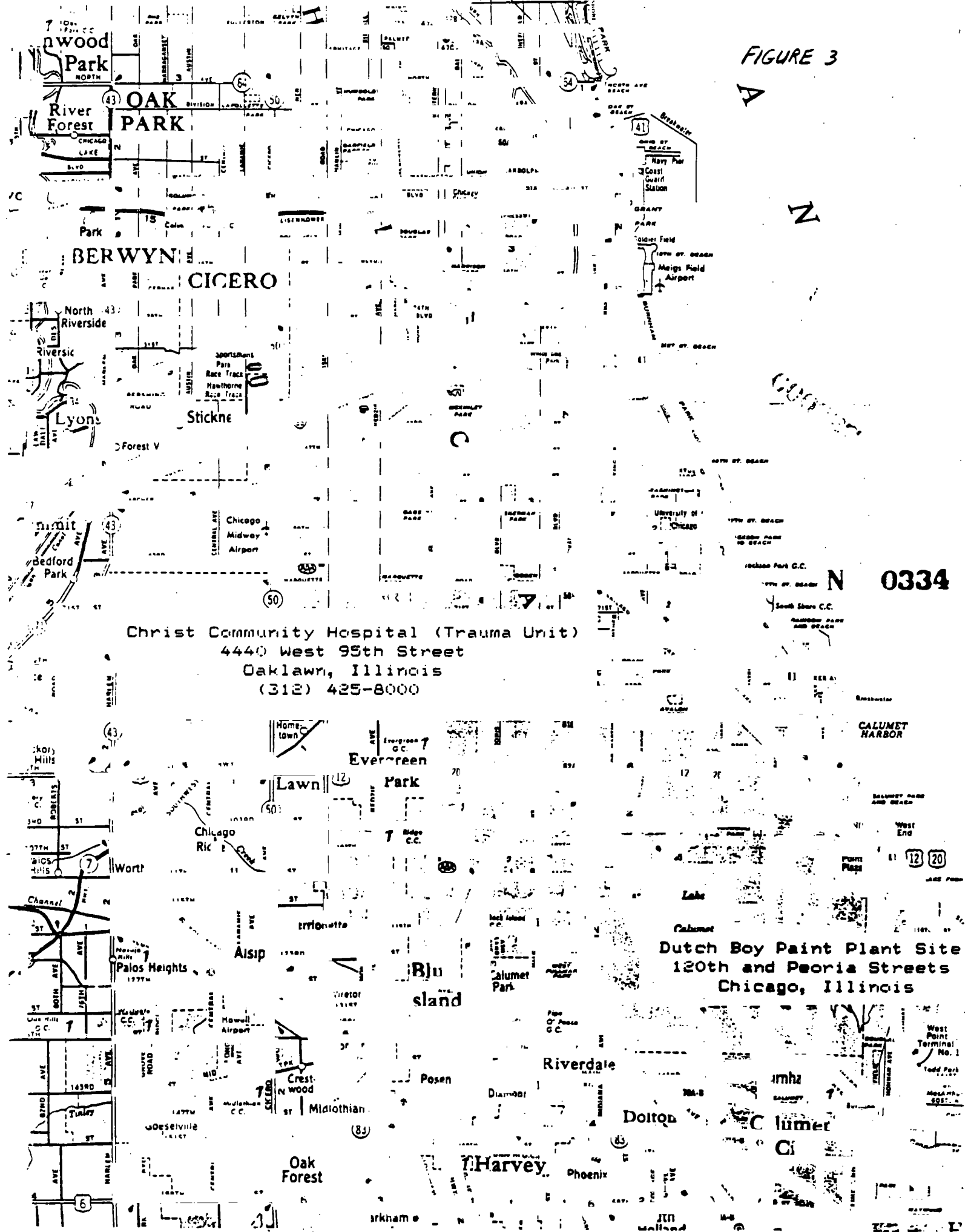


St. Francis Hospital
12935 South Gregory
Blue Island, Illinois
(312) 597-2000

Dutch Boy Paint Plant Site
120th and Peoria Streets
Chicago, Illinois

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A



ATTACHMENT A
STANDARD OPERATING PROCEDURES
PHASE III SITE INVESTIGATION
DUTCH BOY PAINT PLANT SITE
CHICAGO, ILLINOIS

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STANDARD OPERATING PROCEDURES

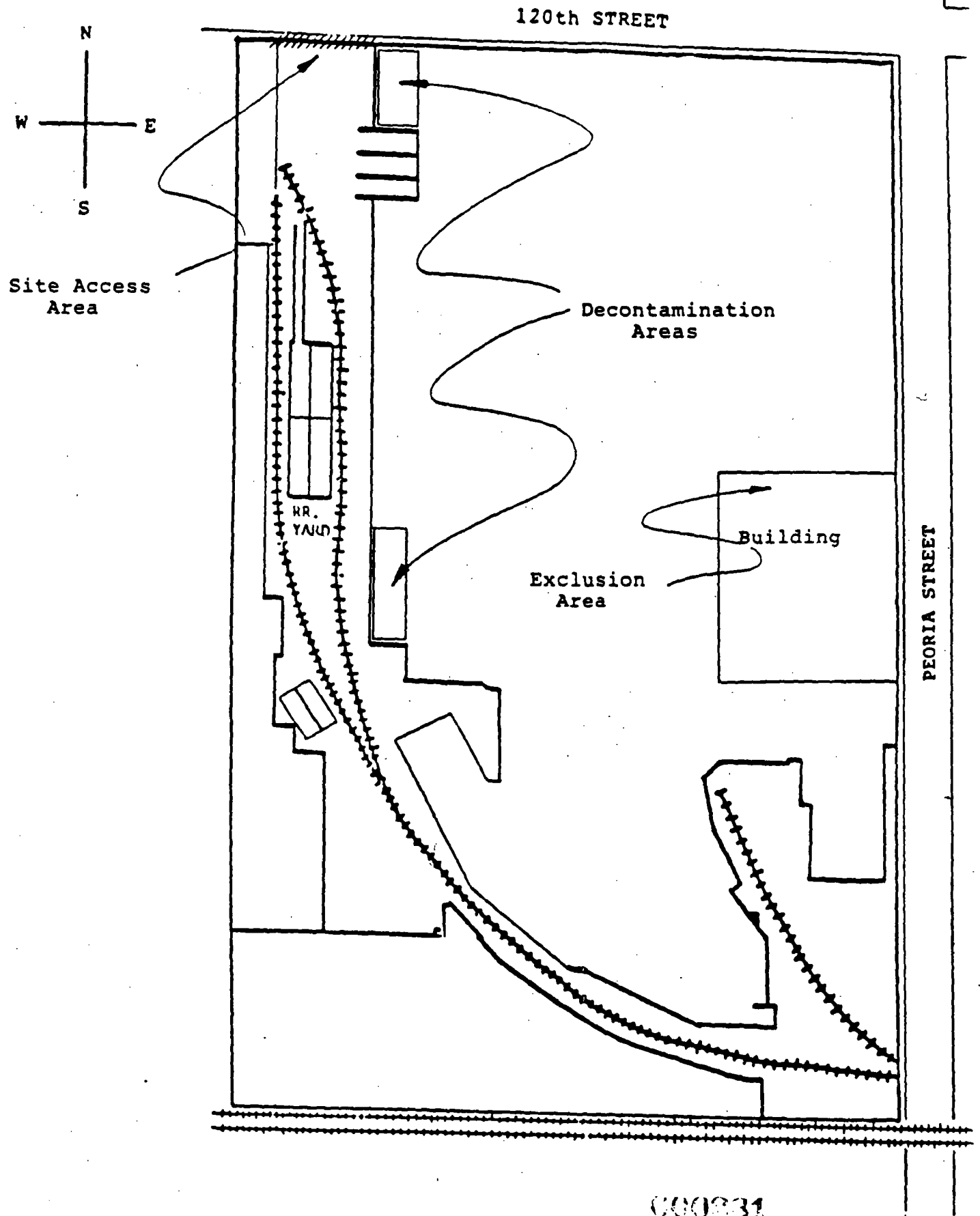
- o Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area designated as contaminated.
- o Hands must be thoroughly washed upon leaving the work area.
- o Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, leachate or discolored surfaces; or lean, sit or place equipment on drums, containers or in soil suspected of being contaminated.
- o Medicine and alcohol can complicate the effects from exposure to toxic chemicals. Prescribed drugs should not be taken by personnel during site activities because of potential for absorption, inhalation or ingestion of toxic substance exists. This provision can be waived if specifically approved by a qualified physician. Alcoholic beverage intake is prohibited on this site during working hours.
- o All personnel going on-site must be thoroughly briefed on anticipated hazards, and trained on equipment to be worn, safety practices to be followed, emergency procedures and communications.
- o As part of the safety training program, employees participate in Red Cross first aid and CPR courses to more effectively handle physical and medical emergencies that may arise in the field.
- o Visual contact must be maintained between pairs on-site and site safety personnel. Entry team members should remain close together to assist each other during operations.
- o All field crew members should make use of their senses to alert themselves to potentially dangerous situations which they should avoid (e.g., presence of strong and irritating odors).
- o Personnel should practice unfamiliar operations prior to doing the actual procedures in the field.
- o Field crew members shall be familiar with the physical characteristics of the site, including:
 - wind direction in relation to contamination zones;
 - accessibility to associates, equipment and vehicles;
 - communication;

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- exclusion areas (see attached plat);
 - site access (see attached plat); and
 - nearest water sources.
- o Personnel and equipment in the contaminated area should be kept to a minimum, consistent with effective site operations.
 - o Procedures for leaving a contaminated area must be planned and implemented prior to going on-site with the site specific health and safety plan.

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N 0337



Dutch Boy Paint Site
Chicago, Illinois
March, 1987

N 0338

FIGURE 1



Refer to: 0316005116 - Cook County
Chicago/Dutch Boy

RECEIVED

APR 13 1987

1 11 11 11 11

April 9, 1987

COST RECOVERY NOTICE LETTER

Certified Mail # P298 848990
Return Receipt Requested

April 9, 1987

TO: NL INDUSTRIES, INC.

Please be advised that the State of Illinois has incurred costs for removal action at the old Dutch Boy paint facility located at 12054 South Peoria Street, Chicago, Illinois. The site is legally described as:

Commencing at the north west corner of Peoria Street and north line of the Illinois Central Railroad (now known as the Illinois Central Gulf Railroad) right of way as platted 100 feet wide; thence west along the north lno said right of way 375.20 feet; thence north and parallel with Peoria Street 580.37 feet more or less, to the south line of 120th Street; thence east on the south line of 120th Street 375.20 feet to the west line of Peoria Street; thence south on the west line of Peoria Street to the place of beginning, being a portion of Block 7 in the first addition to West Pullman, a subdivision of the north east 1/4 of Section 29, Township 37 north, range 14 east of the Third Principal Meridian, according to the plat thereof recorded August 22, 1892 as document 1721159;

Said premises also being described as:

The east 375.20 feet of Block 7 in the subdivision of that part of the resubdivision of Block 2 lying south of the alley, except the C.W.P. and S. railway right of way and the C.R.I. and P.R.R. freight house grounds; also subdivision of Blocks 5, 6 and 7 as formerly platted in the first addition to West Pullman,

601159

N 1422

TO: *Fred Baser*

DATE: *4/10/87*

TO: *Robert Tinkler*

DATE: *4/10/87*

TO: *Charlie O'Connor*

DATE: *4/10/87*

FROM: Janet D. Smith

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including the I.C.R.R. Center Avenue Station at the south west corner of said Block 5 and including Aberdeen Street and Morgan Street (vacated) lying between 120th Street and the I.C.R.R. right of way: all being in the first addition to West Pullman, being subdivision of the north east 1/4 of Section 29, Township 37 North, Range 14 east of the Third Principal Meridian, according to the plat thereof recorded March 31, 1902 as document 3224223 and the Certificate of Correction recorded April 9, 1902 as Document 3228028, all in Cook County, Illinois. (Parcel 1 of the Site); and

Beginning at the intersection of the west line of Peoria Street with Lessor's north wayland line, thence west along said wayland line 375.20 feet; thence south at right angles 30 feet; thence east 375.20 feet to a point on the west line of Peoria Street 30 feet south of said north wayland line; thence north 30 feet to the point of beginning. Situated in Chicago, Cook County, Illinois. (Parcel 2 of the Site)

The costs have been incurred for Phases 1 and 2 of the removal action pursuant to Section 22.2 of the Illinois Environmental Protection Act (the "Act") (Ill. Rev. Stat., ch. 111 1/2, para. 1022.2) and the Illinois Hazardous Substance Pollution Contingency Plan, 35 Ill. Adm. Code 750. They are set forth in Attachment A. Phase 1 of the removal action commenced on June 4, 1986 and was completed on June 30, 1986. On July 11, 1986 the Agency provided Notice Pursuant to Section 4(q) of the Environmental Protection Act to potentially responsible parties. None of the potentially responsible parties notified the Agency in writing that it was willing to undertake any corrective measures to clean up the site. The Agency procured a contractor and commenced Phase 2 of the removal action on November 18, 1986. That work was completed on January 26, 1987. Phase 3 of the removal action will be started in the near future.

The Agency has information that you and the other parties designated as Potentially Responsible Parties in Attachment B, are persons who are liable for the costs of removal/remedial action incurred by the State under Section 22.2(f) of the Act.

On March 4, 1987 at a meeting in Springfield, Illinois, NL Industries, Inc. gave to the Agency a Memorandum of Law and an Engineering Report. The Agency has carefully reviewed both documents. It has concluded that the position expressed in those documents is without merit, and the failure of NL Industries, Inc. to provide removal action in accordance with the July 11, 1986 Notice Pursuant to Section 4(q) of the Environmental Protection Act is without sufficient cause.

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N 1423

Cost Recovery Notice Letter
April 9, 1987
Page 3

Therefore, please be advised that this matter has been referred to the Agency's legal staff for the preparation of a formal action to recover these costs. The Agency intends to refer this matter to the Office of the State's Attorney of Cook County, Illinois, Environmental Litigation Division for the filing of a formal complaint.

In order to facilitate possible resolution of this liability issue and to fulfill any applicable requirements of Section 31(d) of the Act, the Agency will provide you and the other potentially responsible parties with the opportunity to meet with appropriate Agency personnel in an effort to resolve such conflicts which could otherwise result in the filing of a formal complaint. We have scheduled the meeting for 10:00 A.M. on Wednesday, April 29, 1987 at the Agency's Maywood office at 1701 South First Avenue, 6th Floor, Maywood, Illinois 60153.

If this arrangement is inconvenient, or if you have any questions regarding this matter, please contact Donald L. Gimbel of the Agency's legal staff at 312/345-9780.

Sincerely,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By William C. Child
William C. Child, Manager *Donald L. Gimbel*
Division of Land Pollution Control

WCC:DLG:bh:0805B

cc: Glenn Sechen, Assistant State's Attorney
Mary Dinkel, IEPA
Linda Cooper, IEPA
Donald Gimbel, IEPA

CO1161

N 1424

STATE OF ILLINOIS

COUNTY OF COOK

)
) SS
)

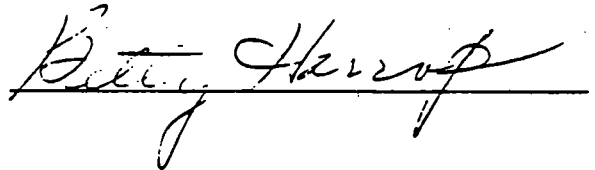
PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached Cost Recovery Notice Letter upon the person(s) to whom it is directed, by placing a copy in an envelope addressed to:

Janet Smith, Environmental Counsel
c/o NL Industries, Inc.
1230 Avenue of the Americas
New York, New York 10020

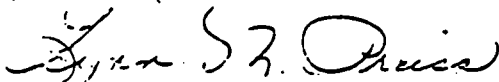
Daniel Riesel
Sive, Paget & Riesel, P.C.
460 Park Avenue
New York, N.Y. 10022

and sending it by certified mail, return receipt requested, from Maywood, Illinois on April 9, 1987, with sufficient postage affixed.



SUBSCRIBED AND SWORN TO BEFORE ME

This 9th day of April, 1987.



Notary Public

601164

N 1427

September 8, 1987

Mr. Richard Carlson
Director
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Attention: Ms. Mary E. Dinkel

Re: Analytical Results
Phase III - Site Investigation
Dutch Boy Paint Plant
Chicago, Illinois

Dear Mr. Carlson:

I am writing on behalf of NL Industries, Inc. ("NL") which, as you know, has retained Toxcon Engineering Company ("Toxcon") for the purposes of (1) assessing conditions at the former Dutch Boy site situated at 120th and Peoria Streets, Chicago, Illinois (the "site" or the "plant"), including any releases of hazardous substances at the site; and (2) evaluating the nature and extent of the removal actions undertaken and proposed by the Illinois Environmental Protection Agency ("IEPA"). As you are also aware, Toxcon, with the approval of IEPA, devised a Phase III Site Investigation Plan to (1) define the nature and extent of lead that may exist in the soils at the site and in adjacent properties; (2) determine if asbestos is present in the surface soils at the south end of the site; and (3) determine the level of volatile organic compounds in the soils near the underground storage tanks on the west side of the site. -

The field investigation was conducted from June 14, 1987 through June 20, 1987. We have reviewed the analytical results from the investigation and, accordingly, write to apprise you of NL's conclusions and recommendations for additional sampling and analysis. The analytical results of the field sampling and the proposed locations for additional sampling are represented on the enclosed plot plans. Certified laboratory data sheets and chain of custody records are included in Appendix A.

NL will submit a supplemental report after all field investigations and analytical work are completed.

Air Pollution Control
Toxic Chemicals
Process Engineering

ER000234

14925-A Memorial Drive
Houston, Texas 77079
(713) 870 0115

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further sampling and analysis be undertaken to determine the lateral extent of soils that contain asbestos.

DISCUSSION

A. Lead Results - Drawing DBP-III-01

Drawing DBP-III-01 reflects the analytical results of the lead samples and approximate location of the sampling points. It should be noted that some of the sampling locations were changed from the locations indicated in the original site sampling plan. The location changes were agreed to by Mary Dinkel, IEPA Remedial Project Manager, during field sampling in order to provide better sampling coverage or because the location to be sampled was inaccessible to the drilling rig.

For each sample point, the drawing denotes the sample number, the total lead value and the EP toxicity lead values, if available. Site characterization samples are designated as Nos. 31-34; samples taken in the parkway across the street from the site are designated as Nos. 22-30; and onsite samples are designated as Nos. 1-17, 19 and 21. The drawing also depicts the results of the road dirt samples and the background samples taken two blocks north, east and south of the site. All samples analyzed were taken at the 0-1 foot interval, except for the road dirt samples which were surface samples.

The samples yielded the following results:

- 1) Only one sample point contained an EP toxicity level of lead greater than 5.0 mg/l, which is considered hazardous. This was Sample Point No. 12 which is located on the west side of the site.
- 2) No onsite samples exhibited elevated total lead levels, except for Sample Point No. 12.
- 3) The parkway samples, designated as Nos. 22-33, averaged a total lead content of 1665 ppm. Background samples, taken at the same 0-1 foot interval as the parkway samples but at points two blocks north, east and south of the site, averaged 1022 ppm total lead content. These two averages are not statistically different at the 95% confidence level. Therefore, it is reasonable to conclude that the levels of lead in the parkway samples are not elevated when compared with the levels of lead contained in the background samples.
- 4) Site characterization Sample Point No. 33 contained 11,400 ppm total lead. The elevated total lead level at this location indicates that further sampling should be undertaken both vertically and laterally. Sample Point No. 33 should be re-sampled and analyzed for total lead and for EP toxicity lead at the 0-1 foot and 1-2 foot intervals. In addition, it is suggested that sampling

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and analysis for total lead and EP toxicity lead at the 0-1 foot and 1-2 foot intervals should be undertaken west of Sample Point No. 33 across from Sample Points 28 and 29, and south of Sample Point No. 33 across from Sample Points 26 and 25. See Drawing DBP-III-01A.

The elevated lead level at this particular location on the site, especially given the significantly lower levels in the surrounding parkway areas, is undoubtedly the result of the demolition activities undertaken by the current property owner and scavengers prior to IEPA's Phase I removal action. Contributing to the elevated lead level at this Sample Point may also be the excavation, storage and removal activities undertaken by IEPA in the northeast corner of the site during the Phase II removal project.

- 5) The data obtained from Sample Point No. 27 is an anomaly. It contains a lower total lead content than Sample Points 29 and 26, but a higher EP toxicity lead level. It should be noted, however, that the level of total lead in Sample No. 27 is not significantly higher than the level of total lead in the background samples, and that the EP toxicity lead level is less than 5.0 mg/l and is not hazardous.

SAMPLE POINT	TOTAL LEAD, PPM	EP TOXICITY LEVEL, MG/L
27	1680	4.6
29	2560	0.27
26	2120	1.19
25	1510	0.25

B. Asbestos Samples - Drawing DBP-III-02

Drawing DBP-III-02 reflects the analytical results and the approximate location of the onsite samples taken to determine the presence of asbestos in the south portion of the site. For each sampling location, the drawing sets forth the sample number and the level of asbestos, if any.

Analysis of the asbestos samples revealed the following:

- 1) No asbestos was detected in eight of the ten samples collected.
- 2) In two samples, denoted as Sample Nos. 4A and 8A, from 1-10% asbestos was found. The presence of asbestos in these locations is attributed to the dispersal of asbestos from improper demolition practices at the site prior to IEPA's Phase I removal project.

Because asbestos was detected in Sample Nos. 4A and 8A, we believe that further sampling and analysis is warranted to determine the lateral extent of soils which contain asbestos. It is suggested that, initially, surface samples should be taken and analyzed for asbestos at specified locations 10 feet from Sample Points 4A and 8A. If these samples indicate the presence of asbestos, then samples located 20 feet from Sample Points 4A and 8A should be analyzed. A list of the proposed sampling points is set forth below:

<u>SAMPLE POINT</u>	<u>LOCATION</u>
4A-10W	10 Ft. west of Sample Point 4A
4A-10E	10 Ft. east of Sample Point 4A
4A-20W	20 Ft. west of Sample Point 4A, if necessary
4A-20E	20 Ft. east of Sample Point 4A, if necessary
8A-10NW	10 Ft. northwest of Sample Point 8A
8A-10SE	10 Ft. southeast of Sample Point 8A
8A-10SW	10 Ft. southwest of Sample Point 8A
8A-20NW	20 Ft. northwest of Sample Point 8A, if necessary
8A-20SE	20 Ft. southeast of Sample Point 8A, if necessary
8A-20SW	20 Ft. southwest of Sample Point 8A, if necessary

See Drawing DBP-III-02A.

C. VOA Samples - Drawing DBP-III-03

Drawing DBP-III-03 reflects the analytical results and the approximate location of each sample taken to determine the level of volatile organics. An HNU photoionization detector was used to determine the presence of volatile organic compounds.

It should be noted that samples were not taken at two of the locations planned because the sampling points were inaccessible to the rig.

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In connection with the discussion of VOA sampling, it is important to understand the stratigraphy in this area of the site. In general, the site stratigraphy may be described as follows:

<u>INTERVAL</u>	<u>DESCRIPTION</u>
0-1 foot	Rocks, fill
1-4 feet	Black sand
4-7 feet	Grey/brown sand
below 7 feet	Grey clay

1) Composite Samples

A total of four composite samples were taken. The composite samples and the analytical results are included on Drawing DBP-III-03. The four composite samples were composed of three or four individual samples which were taken at the 6-7 or 7-8 foot interval at the bottom of the grey/brown sandy layer. The samples were taken at this depth because it is at the 6-7 or 7-8 foot interval that one might expect to find evidence of a leak from the underground tanks if, in fact, such a leak had occurred.

None of the individual samples comprising the composite samples exhibited any odor or discoloration. Moreover, as represented on the drawing, all four composite samples contained less than 0.5 ppm of volatile organic compounds. Based upon this sampling data and the field observations of the samples, it is reasonable to conclude that the underground storage tanks on the west side of the property have not leaked.

2) Samples 35 and 42

It was decided that Sample Nos. 35 and 42 should be taken in the top of the clay layer at the "below 7 foot" interval. Had there been evidence of a leak from the underground storage tanks, sampling at this interval would have permitted us to determine whether any organic compounds had migrated into the clay. As reflected on the drawing, Sample Nos. 35 and 42 contain no evidence of volatile organics. This data strengthens the conclusion that the underground storage tanks have not leaked.

3) Samples 44 and 49

During the drilling of many of the boreholes, the HNU had indicated that volatile organic material was present in the 1-4 foot black sandy interval. Accordingly, it was

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decided to take two samples in the black sandy stratum at the 1-4 foot interval. These samples are denoted as Sample Points 44 and 49. As reflected on the drawing, Sample Nos. 44 and 49 contained 104.4 ppm and 102.8 ppm, respectively, of volatile organic compounds. Both samples looked and smelled oily. The compounds detected in the samples included compounds which one would expect to find in mineral spirits, diesel fuel, and hydraulic oils. Because of the composition and concentration of the volatiles in Sample Nos. 44 and 49, and the fact that the volatiles are found only in the 1-4 foot interval and not in the sandy or clay layers below 4 feet, it is concluded that the volatiles are the result of minor surface spills and are not attributable to any leakage from the underground storage tanks.

CONCLUSION

The lead sampling results suggest that further analysis should be undertaken at the 3-4 foot interval at Sample Point No. 12.

The site characterization data for Sample Point No. 33 also suggests that further sampling and analysis should be undertaken at Sample Point No. 33 and at locations west and south of Sample Point No. 33, as previously described. Samples for total lead and EP toxicity should be taken at the 0-1 foot and 1-2 foot intervals at Sample Point No. 33 as well as at the four suggested sampling locations.

None of the other onsite, parkway or site characterization samples contained significantly elevated lead levels. Accordingly, there is no cause to undertake further analysis for lead at any other sample point.

The asbestos samples indicated the presence of asbestos in two of ten samples. Additional sampling and analysis should be undertaken, as specified, in the area of these two samples to determine the lateral extent of soils containing asbestos.

There is no cause to undertake additional VOA analysis. The composite samples and field observations, as well as the additional VOA samples taken, indicate that the underground storage tanks have not leaked.

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Please call me after you have had an opportunity to review the information in this letter and are prepared to discuss our next step.

Regards,

Robert Finkelstein

Robert Finkelstein
Engineer

cc: F. Baser
J. Smith
D. Riesel

e: 'nlchi'phaseIII.rev
3200/000050

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APPENDIX A

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EROC0244

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LEGEND

EXAMPLE

Sample Number → 001
 Total Lead, ppm → 100
 EP Toxicity Lead, ppc → ND

NA - Not Available
 ND - Not Detected

SYMBOLS

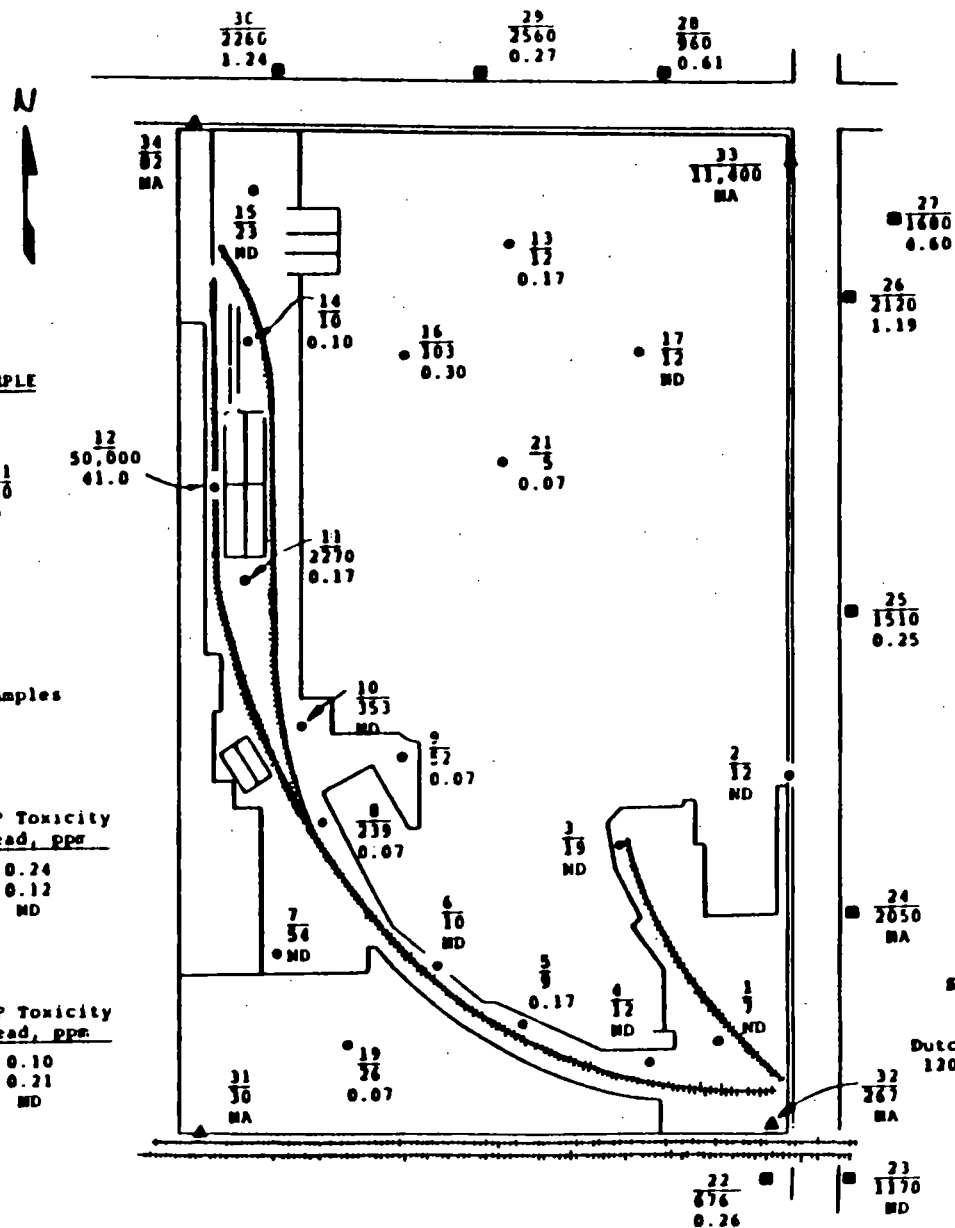
■ Parkway samples
 ▲ Site characterization samples
 ● On-site samples

ROAD DIRT SAMPLING

Location	Total Lead ppm	EP Toxicity Lead, ppc
North, 2 blocks	445	0.24
East, 2 blocks	737	0.12
South, 2 blocks	236	ND

BACKGROUND SAMPLES

Location	Total Lead ppm	EP Toxicity Lead, ppc
North, 2 blocks	347	0.10
East, 2 blocks	1290	0.21
South, 2 blocks	1430	ND



Phase III
 Site Investigation
 Lead Sampling Data
 Dutch Boy Paint Plant
 120th and Peoria Sts
 Chicago, Illinois
 June - July, 1987

NOTE: All samples except Road Dirt
 samples are 0-1 ft. intervals.

DWG DBI-111-01

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LEGEND

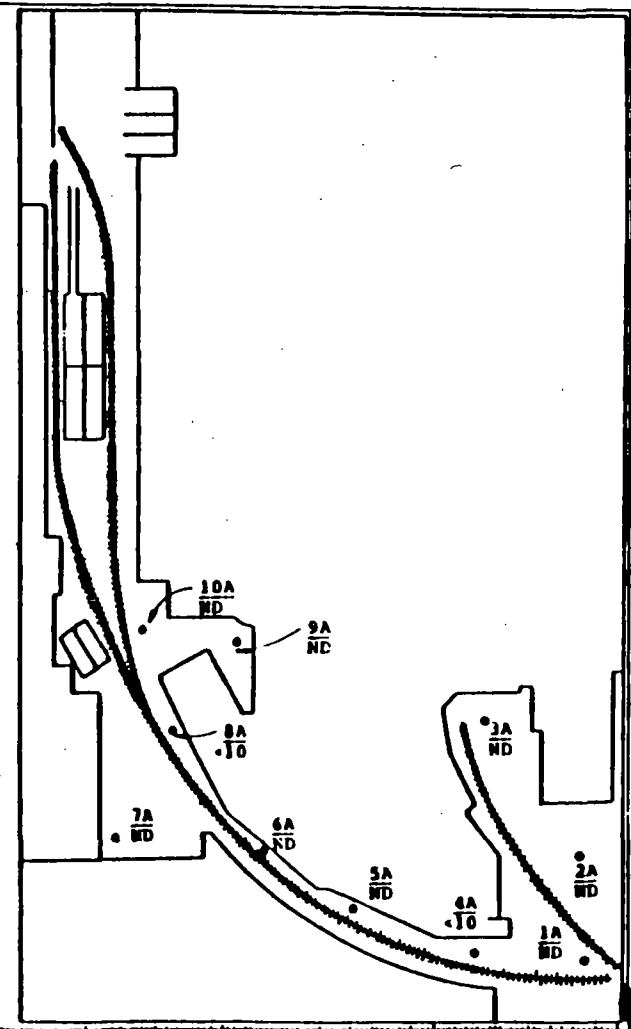
Sample Number
Asbestos, A

EXAMPLE

0018
3 or ND

ND - None Detected

N



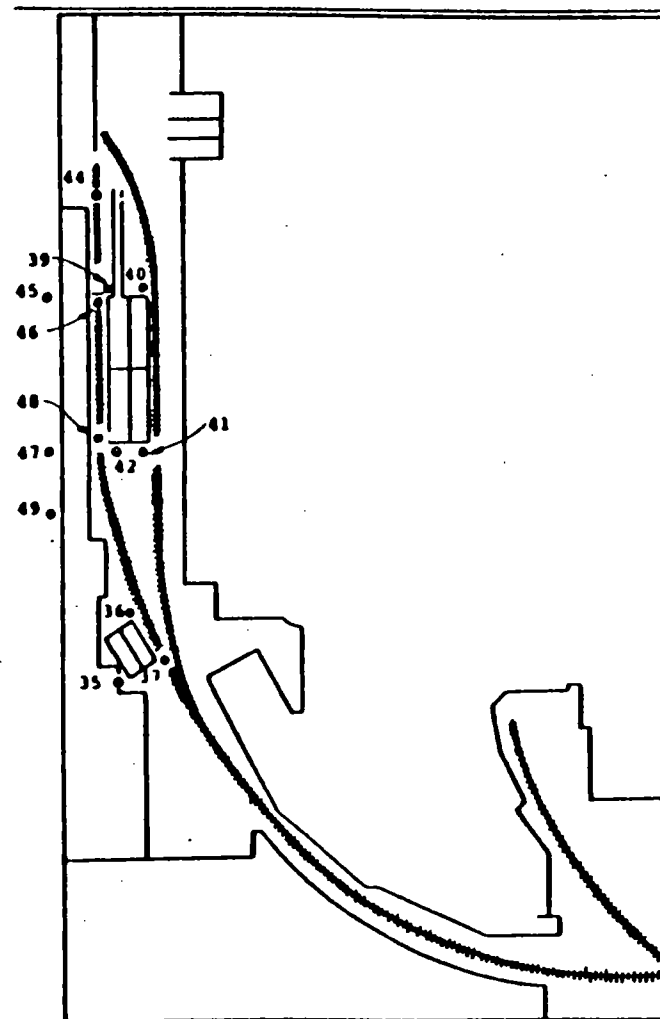
Phase III
Site Investigation
Asbestos Sampling Data
Dutch Boy Paint Plant
120th and Peoria Street
Chicago, Illinois
June - July, 1987

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LEGEND		
Sample	Sampling Interval	Total VOA PPM
Composite 35, 36, 37	6-7 feet	.122
Composite 47, 48, 49	6-7 feet	.112
Composite 44, 45, 46	6-7 feet	ND
Composite 39, 40, 41, 42	6-8 feet	.485
35	7-8 feet	.192
42	8-9 feet	ND
44	2-3 1/2 feet	104.4
49	4-5 feet	102.8

ND = Not Detected



Phase III
Site Investigation
Volatile Organic Compound
Data
Dutch Boy Paint Plant S
120th and Peoria Street
Chicago, Illinois
June - July, 1987

LEGEND

EXAMPLE

Sample Number 001
 Total Lead, ppm 100
 EP Toxicity Lead, ppm ND

NA - Not Available
 ND - Not Detected

SYMBOLS

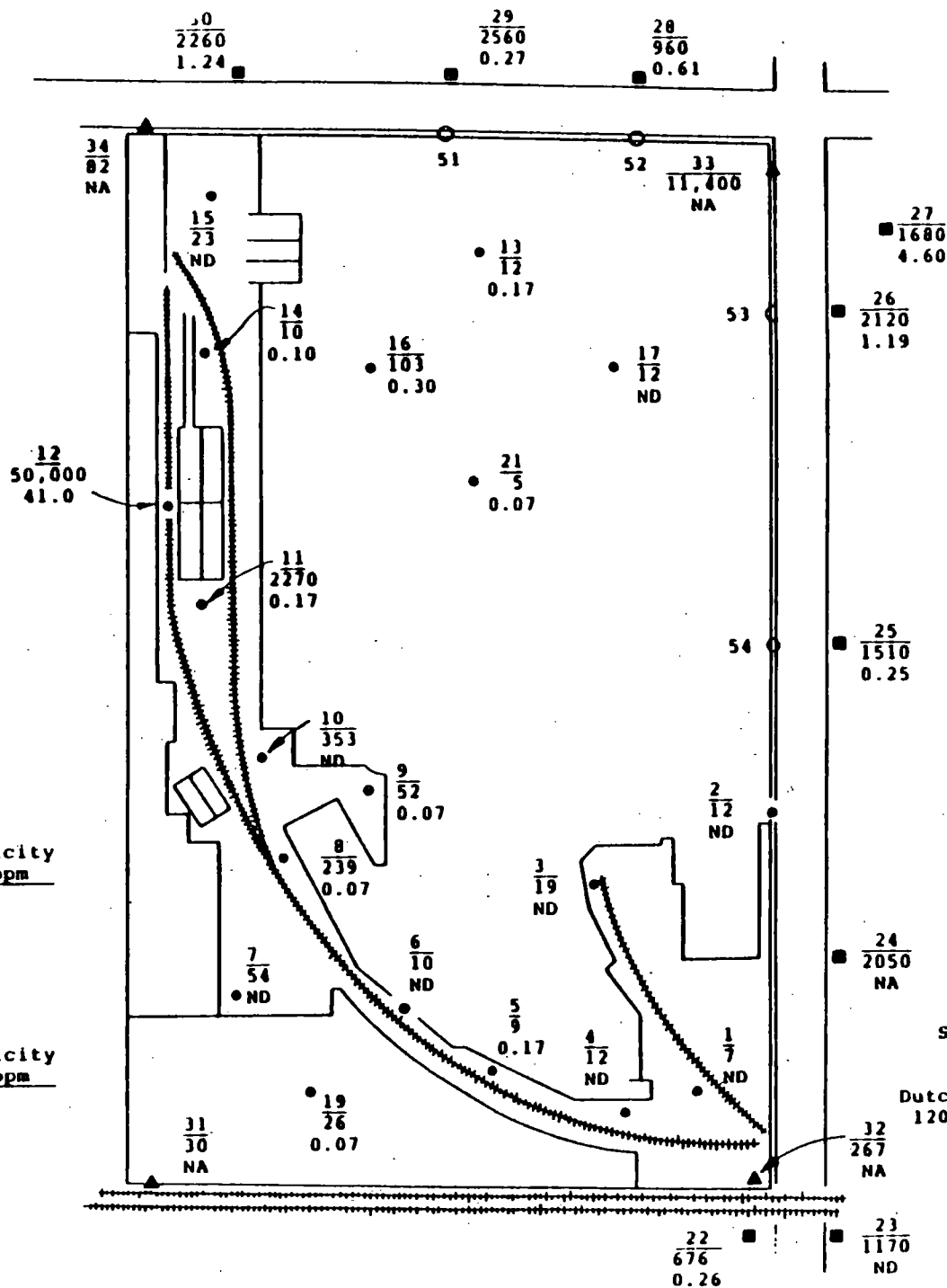
- Parkway samples
- ▲ Site characterization samples
- On site samples
- Proposed sample points

ROAD DIRT SAMPLING

Location	Total Lead ppm	EP Toxicity Lead, ppm
North, 2 blocks	445	0.24
East, 2 blocks	737	0.12
South, 2 blocks	236	ND

BACKGROUND SAMPLES

Location	Total Lead ppm	EP Toxicity Lead, ppm
North, 2 blocks	347	0.10
East, 2 blocks	1290	0.21
South, 2 blocks	1430	ND



Phase III
 Site Investigation
 Lead Sampling Data
 Dutch Boy Paint Plant Site
 120th and Peoria Streets
 Chicago, Illinois
 June - July, 1987

NOTE: All samples except Road Dirt samples are 0-1 ft. intervals.

DWG DBP-III-01A

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 001959



LEGEND

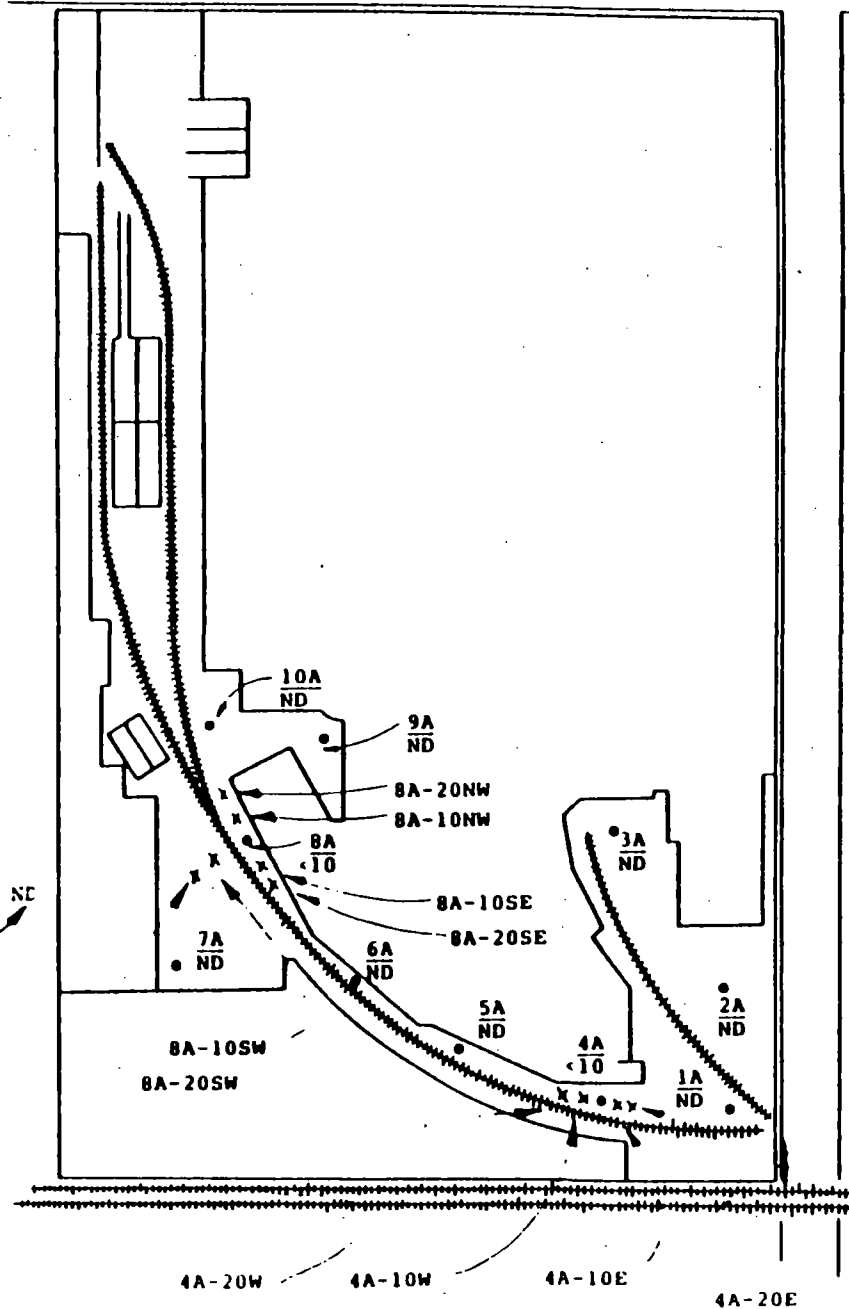
EXAMPLE

Sample Number
Asbestos, %

001B
<5 or ND

ND - None Detected

X - Proposed sample points



Phase III
Site Investigation
Asbestos Sampling Data
Dutch Boy Paint Plant Site
120th and Peoria Streets
Chicago, Illinois
June - July, 1987

BRCC0248

001960

August 9, 1988

RECEIVED IN THE
OFFICE OF THE DIRECTOR

Mr. Richard Carlson
Director
Illinois Environmental Protection Agency
220 Churchill Road
Springfield, IL 62706

AUG 18 1988



Attention: Mr. Brian Martin

Re: Analytical Results
Phase III - Supplemental Site Investigation
Dutch Boy Paint Plant
Chicago, Illinois

Dear Mr. Carlson:

I write on behalf of NL Industries, Inc. ("NL") which has retained Toxcon Engineering Company, Inc. ("Toxcon") to furnish technical consulting services regarding conditions at the former Dutch Boy site (the "site") in Chicago, Illinois.

As you know, Toxcon, with the approval of the Illinois Environmental Protection Agency ("IEPA"), devised a Phase III Site Investigation Plan to (1) define the nature and extent of lead in the soils at the site and in adjacent properties; (2) determine if asbestos is present in surface soils at the south end of the site; and (3) determine if the underground tanks on the west side of the site have leaked.

On September 8, 1987, Toxcon submitted to IEPA the analytical results from the field sampling undertaken in June 1987 pursuant to the Site Investigation Plan, along with proposed locations for additional sampling to better delineate the vertical and lateral extent of areas containing elevated EP toxicity lead and asbestos. Specifically, we recommended that further analysis be undertaken for total lead content and EP toxicity lead at the 3-4 foot interval at Sample Point No. 12. Toxcon also recommended resampling at Sample Point No. 33, as well as additional sampling at locations west and south of Sample Point No. 33, for total lead and EP toxicity lead. Finally, we recommended that further sampling be undertaken at two locations containing 1-10% asbestos to determine the lateral extent of soils that contain asbestos. Since levels of volatile organics indicative of tank leakage were not detected, we concluded that the underground storage tanks on the west side of the site had not leaked and, accordingly, determined that additional VOA sampling was not required.

Air Pollution Control
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0000790

Mr. Richard Carlson
Page 2
August 9, 1988

On September 22, 1987, I met with IEPA Project Manager, Mary Dinkel, and Staff Counsel, Donald Gimbel, at IEPA's Maywood office to discuss the analytical results, conclusions and recommendations contained in our September 8, 1987 letter. Ms. Dinkel noted her general agreement with both the conclusions drawn from the analytical results and our recommendations for further sampling. However, Ms. Dinkel requested that NL also resample offsite Sample Point No. 27, and collect samples at three locations surrounding Sample Point No. 27. Ms. Dinkel further suggested sampling at locations north and south of Sample Point No. 12 to better define the area of elevated EP toxicity lead. We agreed to continue discussion of the proposed follow-up sampling after IEPA had received and evaluated its analytical results.

On October 13, 1988, I telephoned Ms. Dinkel to inquire about her evaluation of IEPA's data and the proposed follow-up sampling. Ms. Dinkel informed me that IEPA's lead and asbestos analyses agreed with NL's, except at one sample point where IEPA's split contained concentrations of asbestos greater than 1%. Accordingly, she suggested, and we agreed, to conduct further sampling at this particular location -- Sample Point No. 3A -- as well as at the locations we had recommended. Ms. Dinkel also informed me that IEPA agreed with NL's conclusion that no further sampling associated with the underground tanks was necessary since the VOA analytical data indicated the tanks had not leaked.

By letter dated December 11, 1987, Brian Martin, who succeeded Ms. Dinkel, outlined the follow-up sampling plan and indicated it was appropriate for NL and Toxcon to proceed with the supplemental field investigation.

Thus, on February 10, 1988 and February 11, 1988, Toxcon conducted the additional field sampling agreed to by IEPA. We have reviewed the analytical results of the additional sampling and we now write to apprise IEPA of those results and our conclusions. The analytical results of the February 1988 field investigation are represented on the enclosed plot plans. Certified laboratory data sheets and chain of custody records are included in Appendix A.

Summary of Supplemental Field Sampling

A. Lead Samples

- 1) EP toxicity lead levels greater than 5.0 mg/l, which is designated as hazardous under EPA's definition in 40 C.F.R. Section 261, were detected at the 0-1 foot stratum at Sample Point No. 12 and Sample Point No. 1211, located south of Sample Point No. 12. Samples

ER000426

August 9, 1988

collected at the 3-4 foot stratum did not contain elevated levels of EP toxicity lead.

- 2) A repeat surface sample collected at Sample Point No. 27 and a surface sample collected at a location 20 feet southeast of Sample Point No. 27, denoted as Sample Point No. 27SE, contained elevated levels of EP toxicity lead.
- 3) A repeat sample collected at site characterization Sample Point No. 33 did not contain elevated EP toxicity lead, nor did the repeat sample contain elevated levels of total lead.
- 4) Sample No. S29P, located west of site characterization Sample Point No. 33 and south of parkway Sample Point No. 29, contained elevated EP toxicity lead at the 0-1 foot stratum, but not at the 1-2 foot stratum.

B. Asbestos Samples

- 1) Samples collected at locations 10 feet from Sample Points Nos. 3A and 4A contained less than 1% asbestos.
- 2) All samples collected at locations 10 and 20 feet from Sample Point No. 8A contained concentrations of asbestos greater than 1%.

Discussion

A. Lead Sampling Results - Drawing 001

Analytical results from the June 1987 field sampling showed elevated levels of EP toxicity lead at Sample Point Nos. 12 and 27. The results also showed that site characterization Sample No. 33 contained elevated total lead. Accordingly, supplemental field sampling was undertaken to determine the levels of EP toxicity lead in these areas.

1. Sample Point No. 12

To determine the lateral extent of elevated EP toxicity lead levels in the area of Sample Point No. 12, samples were collected at two new locations located half the distance between Sample Point No. 12 and the nearest previously sampled locations to the north (Sample Point No. 14A) and to the south (Sample Point No. 11). The new sample points are denoted, respectively, as Sample Point Nos. 1214 and 1211 (See Drawing 001).

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To determine the vertical extent of elevated EP toxicity lead, samples were collected at the 0-1 foot, 3-4 foot and 6-7 foot strata. Samples from the February, 1988 sampling in the 0-1 foot stratum at Sample Point Nos. 1211 and 1214, and in the 3-4 foot stratum at Sample Point Nos. 12 and 1211, were analyzed for total lead and EP toxicity lead.

The analytical results from the February 1988 field sampling revealed EP toxicity lead greater than 5 mg/l only in the 0-1 foot stratum at Sample Point No. 1211.

SAMPLE POINT	DEPTH	TOTAL LEAD ppm	EP TOXICITY LEAD mg/l
1214	0-1'	6470.	0.76
1211	0-1'	3390.	23.4
12	3-4'	26.	0.09
1211	3-4	3130.	0.24

The analytical results from the June 1987 field sampling which indicated elevated EP toxicity lead in the 0-1 foot stratum at Sample Point No. 12, and the results from the February 1988 sampling set forth above, show that the area of elevated EP toxicity lead on the west side of the site lies between Sample Point No. 1214 to the north and Sample Point No. 11 to the south. The vertical extent of soils containing EP toxicity lead in this area is confined to the 0-3 foot stratum. Based on these results, it appears that approximately 100 cubic yards of soil around Sample Point No. 12 are likely to be affected.

The eastern boundary of EP toxicity lead in the area of Sample Point No. 12 is not presently known. Although the Phase III Site Investigation Plan called for the collection of soil samples in this area, located east of the loading dock, samples could not be collected there during the June 1987 field investigation due to the presence of large above-ground tanks. Since the tanks have now been removed, we will, at a convenient time, sample east of Sample Point No. 12 as originally planned. We do not believe, however, that this sampling will significantly change any conclusions we have drawn from the analytical results obtained to date or delay any further discussions with IEPA regarding the site.

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August 9, 1988

2. Sample Point No. 33

Analytical results from the samples collected in June 1987 at Sample Point No. 33 were intended to be used for site characterization only and, therefore, the samples were analyzed for total lead, not EP toxicity lead. However, the elevated total lead levels contained in Sample No. 33 indicated that further testing should be undertaken vertically and laterally.

Accordingly, to determine the lateral extent of elevated lead levels in that area, Sample Point No 33 was resampled and four new samples were collected: two to the west of Sample Point No. 33, denoted as Sample Point Nos. S28P and S29P; and two to the south of Sample Point No. 33, denoted as Sample Point Nos. W26P and W25P. All sampling locations were within the parkways on the south side of 120th Street and the west side of Peoria Street (See Drawing 001).

To determine the vertical extent of elevated lead levels in the area of Sample Point No. 33, it was agreed that samples would be analyzed for total lead and EP toxicity lead in the 0-1 foot stratum at all five locations, and in each stratum below that if the sample indicated elevated EP toxicity lead.

The analytical results from the February 1988 field sampling revealed that Sample No. S29P contained elevated EP toxicity lead at the 0-1 foot stratum. Accordingly, the sample collected from the 1-2 foot stratum at Sample Point No. S29P was also analyzed. Elevated EP toxicity lead was not, however, detected in the 1-2 foot stratum.

SAMPLE POINT	DEPTH	TOTAL LEAD ppm	EP TOXICITY LEAD mg/l
S29P	0-1'	8120.	22.0
S29P	1-2'	20.5	0.01
S28P	0-1'	1180.	0.14
33	0-1'	1480.	0.70
W26P	0-1'	4310.	0.54
W25P	0-1'	173.	0.62

The results of the field sampling in the area of Sample Point No. 33 indicate elevated EP toxicity lead only in the 0-1 foot stratum at Sample Point No. S29P. The results of the field sampling conducted in both June 1987 and February 1988 reveal that elevated EP

ER000429

August 9, 1988

toxicity lead in this area is limited to the parkway area south of 120th Street between Sample Point Nos. 34 and S28P. The vertical extent of EP toxicity lead is confined to the 0-1 foot stratum. Based on these results, it appears that approximately 30 cubic yards of soil around Sample Point No. S29P are likely to be affected.

3. Sample Point No. 27

During the June 1987 field sampling, IEPA representative Mary Dinkel requested that samples be collected offsite at what has been denoted Sample Point No. 27. Analytical results from that sampling effort showed elevated, though not hazardous, EP toxicity lead levels of 4.60 mg/l.

At the September 22, 1987 meeting with IEPA in Maywood, Ms. Dinkel requested additional sampling at this location in order to better determine the lateral extent of elevated EP toxicity lead. Ms. Dinkel indicated that she had heard unsubstantiated rumors of some unusual event in the area of Sample Point No. 27. She did not indicate that what occurred was connected in any way to operations at the site.

Ms. Dinkel suggested resampling Sample Point No. 27 and collecting samples at three new locations 20 feet north, southeast and southwest of Sample Point No. 27. In addition to these samples, we decided, during the February, 1988 sampling to collect a sample at one new location 30 feet north of Sample Point No. 27 (See Drawing 001). All field samples collected during the February 1988 sampling effort were surface samples and all were analyzed for total lead and EP toxicity lead. We note that during the June 1987 sampling the property from which Sample No. 27 was collected contained what appeared to be unoccupied structures. At the time of the February 1988 follow-up sampling, we observed that all of the structures on the property had been removed.

LOCATION NO.	DEPTH	TOTAL LEAD ppm	EP TOXICITY LEAD mg/l
27SW-20	Sfc.	12800.	1.03
27SE-20	Sfc.	2750.	9.75
27N-20	Sfc.	4570.	1.18
27R	Sfc.	9970.	8.96
27N-30	Sfc.	4710.	0.55

—
ERO00420

August 9, 1988

The analytical results of the February 1988 field sampling revealed elevated EP toxicity lead at Sample Point Nos. 27R (repeat of sample point no. 27) and 27SE, which is located 20 feet to the southeast of Sample Point No. 27R. Although the lateral extent of EP toxicity lead in this area is defined to the north and west of Sample Point No. 27R, there is no lateral definition of EP toxicity lead to the south, southeast and east of Sample Point No. 27SE.

B. Asbestos Sampling Results - Drawing 002

Analytical results from the June 1987 field sampling revealed that Sample Nos. 3A, 4A, and 8A had concentrations of asbestos greater than 1% (See Drawing 002). Accordingly, we recommended that additional samples be collected to determine the lateral extent of soils containing asbestos. It was agreed that, initially, samples collected 10 feet from Sample Point Nos. 3A, 4A and 8A would be analyzed. If those samples indicated the presence of asbestos, then samples collected 20 feet from the sample points would be analyzed.

1. Sample Point No. 3A

Sample No. 3A, collected during the June 1987 field investigation, was split with IEPA. Although the split analyzed for NL contained less than 1% asbestos, the split analyzed for IEPA contained from 1-10% asbestos. Thus, it was determined that further sampling and analysis was warranted at this location.

Accordingly, during the February 1988 field sampling, surface samples were collected 10 and 20 feet to the northeast of Sample Point No. 3A. Analysis of the sample collected 10 feet from Sample Point No. 3A indicated that the soils did not contain asbestos. Based on these results, it appears that approximately 10 cubic yards of soil around Sample Point No. 3A are likely to be affected.

2. Sample Point No. 4A

During the February 1988 supplemental sampling, surface samples were collected at locations 10 and 20 feet to the north and west of Sample Point No. 4A. The analytical results from the sampling revealed that none of the samples collected contained concentrations of asbestos greater than 1%. Based on these results, it appears that approximately 10 cubic yards of soil around Sample Point No. 4A are likely to be affected.

BR000431

Mr. Richard Carlson
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August 9, 1988

In our September 8, 1987 letter to IEPA, we recommended that samples be collected 10 and 20 feet to the east and west of Sample Point No. 4A. Site conditions, however, permitted sampling only to the north and west. This amendment to the sampling plan was approved by IEPA representative Brian Martin during the February 1988 sampling effort.

3. Sample Point No. 8A

Surface samples were collected during the February 1988 sampling effort at locations 10 and 20 feet to the northwest, southwest and southeast of Sample Point No. 8A.

Each of the three samples collected 10 feet from Sample Point No. 8A was found to contain concentrations of asbestos greater than 1%. Therefore, the three samples collected 20 feet from Sample Point No. 8A, denoted as Sample Point Nos. 8A-20NW, 8A-20SW and 8A-20SE, were analyzed (See Drawing 002). The results of the analyses indicated that concentrations of asbestos greater than 1% are present in all soils collected 20 feet from Sample Point No. 8A.

The analytical results of the June 1987 field sampling indicated that there was no asbestos in the soils at Sample Point Nos. 10A, 7A, 6A, and 9A to the northwest, southwest, southeast, and northeast, respectively, of Sample Point No. 8A (See Drawing 002). The lateral extent of soils containing asbestos, therefore, is limited to the area between Sample Point No. 8A and Sample Point Nos. 10A, 7A, 6A, and 9A. Based on these results, it appears that approximately 120 cubic yards of soil around Sample Point No. 8 are likely to be affected.

C. VOA RESULTS

IEPA agreed, based upon the analytical results of the June 1987 sampling, that there was no cause to undertake supplemental VOA analysis. The composite samples collected and field investigation undertaken during the June 1987 sampling effort indicated that the underground storage tanks had not leaked.

DR000432

Mr. Richard Carlson
Page 9
August 9, 1988

CONCLUSION

Data obtained from the June 1987 and February 1988 sampling indicates that there is one on-site area and two off-site areas containing EP toxicity lead greater than 5 mg/l. These areas are, respectively, Sample Point Nos. 12, S29P, and 27. The likely volumes of affected soils around sample points 12 and S29P are approximately 100 and 30 cubic yards, respectively. The volume of affected soils around Sample Point No. 27 cannot be estimated since the extent of affected soils to the south, southeast, and east of Sample Point No. 27SE has not been defined.

We will collect an additional sample to the east of Sample Point No. 12, as originally planned, now that the above ground tanks have been removed. This additional sampling is not expected to change the conclusions drawn from the analytical results obtained to date, nor will it delay or interfere with any further discussions with IEPA.

The data obtained from the June 1987 and February 1988 sampling indicated three locations containing asbestos in concentrations greater than 1%. These locations are at Sample Point Nos. 3A, 4A, and 8A. The likely volume of affected soils is approximately 10, 10, and 120 cubic yards, respectively.

The levels of volatile organics in the soils surrounding the underground storage tanks indicate that the tanks have not leaked.

The principal objectives of the Phase III Site Investigation Plan have been accomplished. After you have had the opportunity to review the information set forth in this letter, please feel free to call me with any questions you may have or to discuss the next step.

Regards,

Robert Finkelstein

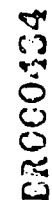
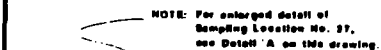
Robert Finkelstein
Engineer

RF:pm

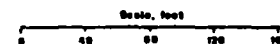
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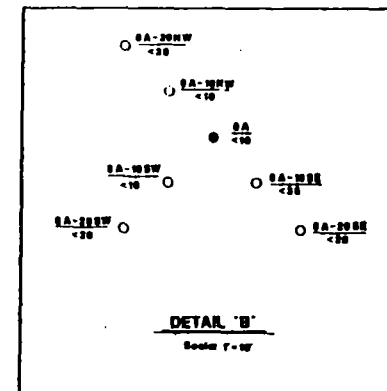
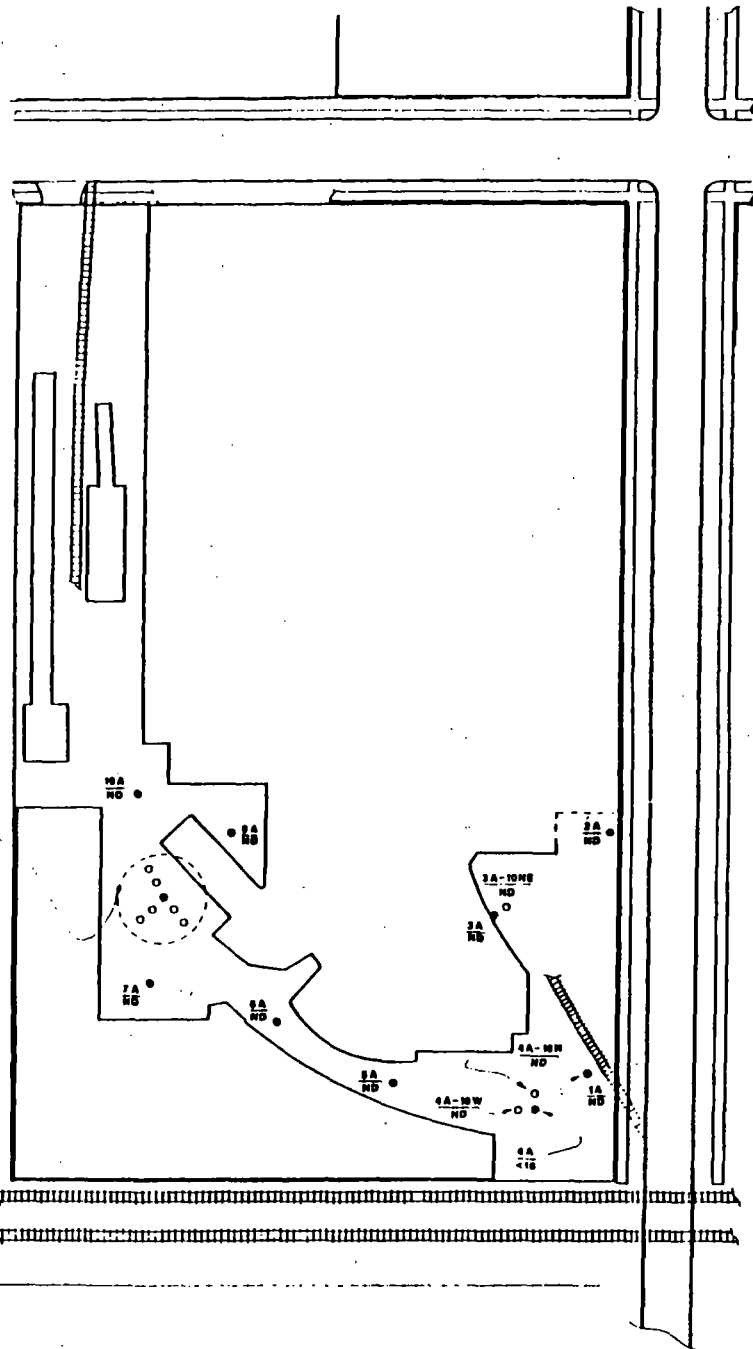
BR000433



Sample Number/Sampling Depth, ft.	Example C850-f
Total Lead, ppm	100
GP Toxicity Lead, ppm	100
NA: Not Available	
ND: Not Detected	



TOXCON ENGINEERING CO., Inc.			
Houston, Texas			
DATE	REPORT NO.	ORDER NO.	BAR
Feb 8-19-88	RF		
Phase III Site Investigation			
February 1988 Lead Sampling			
Former Duich Boy Point Plant Site			
Chicago, Illinois			
See drawing 001			001



ERO00435

LEGEND

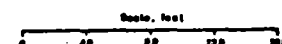
Location Symbols

Feb. 68	Jun. 67	Description
O	O	On-Site Samples

Analytical Results

Sample Number	Sample
Asbestos Content, %	0.00

All samples collected at the surface only.
ND: Not Detected



TOXCON ENGINEERING CO., Inc.		
Houston, Texas		
DATE	PROJECT NO.	CLIENT
8-10-68	AF	ARMED
Phase II Site Investigation		
February 1968 Asbestos Sampling		
Former Dutch Bay Point Plant Site		
CHicago, Illinois	002	

of Sample Location No. 2,
in drawing.